

**LA-UR-21-21460**

Approved for public release; distribution is unlimited.

Title: 2019 ASER Supplemental Tables Chapters 7 and 8

Author(s): Gaukler, Shannon Marie  
Hansen, Leslie Ann

Intended for: Supplemental Tables for 2019 Annual Site Environmental Report -  
published on external LANL website

Issued: 2021-02-16

---

**Disclaimer:**

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by Triad National Security, LLC for the National Nuclear Security Administration of U.S. Department of Energy under contract 89233218CNA000001. By approving this article, the publisher recognizes that the U.S. Government retains nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

2019 ASER Supplemental Tables Chapters 7 and 8

This pdf contains the data tables that will be posted on the LANL external website as a supplement to the Los Alamos National Laboratory 2019 Annual Site Environmental Report for Chapters 7 and 8.

**Table S7-1. Concentrations of selected radionuclides in soil (0- to 6-inch depth) collected around the perimeter of Area G in 2019.**

Location	<sup>3</sup> H pCi/g		<sup>241</sup> Am pCi/g		<sup>137</sup> Cs pCi/g		<sup>238</sup> Pu pCi/g		<sup>239/240</sup> Pu pCi/g		<sup>90</sup> Sr pCi/g		<sup>234</sup> U pCi/g		<sup>235/236</sup> U pCi/g		<sup>238</sup> U pCi/g	
	Result <sup>a</sup>	Detected	Result	Detected	Result	Detected	Result	Detected	Result	Detected	Result <sup>b</sup>	Detected	Result	Detected	Result	Detected	Result	Detected
<b>Perimeter of Area G</b>																		
21-01	0.0095	N	0.0031	N	0.0990	N	0.0063	N	0.0331	Y	0.0680	N	0.9130	Y	0.0449	Y	0.9870	Y
26-01	0.0283	Y	0.0158	Y	0.1590	N	0.0218	Y	0.0280	Y	0.0340	N	0.9220	Y	0.0463	Y	0.9240	Y
29-03	<b>0.2248</b>	Y	0.0029	N	0.0760	N	0.0260	Y	0.0188	Y	-0.0340	N	0.7670	Y	0.0398	Y	0.7870	Y
30-01	<b>2.6244</b>	Y	0.0080	N	0.0470	N	0.0206	Y	0.0106	N	-0.0480	N	0.8190	Y	0.0405	Y	0.7400	Y
32-02	<b>0.4073</b>	Y	0.0065	N	0.0830	N	0.0134	Y	0.0330	Y	0.0580	N	0.8760	Y	0.0517	Y	0.8200	Y
36-02	0.0345	Y	<b>0.0840</b>	Y	0.2920	Y	0.0133	Y	<b>0.3000</b>	Y	0.0850	Y	0.9590	Y	0.0503	Y	0.9830	Y
38-01	0.0167	N	<b>0.2740</b>	Y	0.0500	N	<b>0.0430</b>	Y	<b>1.2300</b>	Y	-0.0030	N	0.8320	Y	0.0330	Y	0.8110	Y
40-01	0.0079	N	<b>0.1480</b>	Y	0.1400	N	<b>1.5800</b>	Y	<b>0.3990</b>	Y	0.0520	N	0.8280	Y	0.0396	Y	0.8030	Y
42-01	0.0455	Y	<b>0.0262</b>	Y	0.0480	N	<b>0.2690</b>	Y	<b>0.1360</b>	Y	0.1340	Y	1.0060	Y	<b>0.0800</b>	Y	0.9680	Y
45-05	<b>0.0781</b>	Y	<b>0.0672</b>	Y	0.2620	Y	<b>0.2720</b>	Y	<b>0.1920</b>	Y	0.1470	Y	0.9100	Y	0.0408	Y	0.9100	Y
48-01	0.0209	N	<b>0.1880</b>	Y	0.0450	N	<b>0.4030</b>	Y	<b>0.5510</b>	Y	-0.0220	N	0.8390	Y	0.0348	Y	0.8230	Y
52-01	0.0094	N	<b>0.0271</b>	Y	0.2230	N	0.0187	N	<b>2.4100</b>	Y	0.0200	N	0.8530	Y	0.0401	Y	0.8350	Y
58-01	0.0594	Y	0.0040	N	0.5410	Y	<b>0.0880</b>	Y	<b>0.1340</b>	Y	0.0610	N	1.1120	Y	<b>0.0980</b>	Y	1.1930	Y
<b>TA-54/Pueblo de San Ildefonso Boundary</b>																		
T-3B <sup>c</sup>	0.0016	N	<b>0.0191</b>	Y	0.1960	N	0.0152	N	<b>0.1000</b>	Y	0.0770	N	0.8310	Y	0.0397	Y	0.8390	Y
T-3B <sup>c</sup>	0.0200	N	<b>0.0220</b>	Y	0.2240	N	0.0180	N	<b>0.1050</b>	Y	0.0920	Y	0.9170	Y	0.0454	Y	0.8880	Y
<b>Screening Levels</b>																		
<i>RSRL<sup>d</sup></i>	pCi/g	Receptor	pCi/g	Receptor	pCi/g	Receptor	pCi/g	Receptor	pCi/g	Receptor	pCi/g	Receptor	pCi/g	Receptor	pCi/g	Receptor	pCi/g	Receptor
<i>RSRL<sup>d</sup></i>	0.0713	NA	0.0187	NA	0.7343	NA	0.0314	NA	0.0571	NA	0.4221	NA	1.496	NA	0.0794	NA	1.481	NA
<i>NE-ESL (Plant)<sup>e</sup></i>	36000	plant	500	plant	1500	plant	1800	plant	1900	plant	1100	plant	440	plant	440	plant	400	plant
<i>LE-ESL (Plant)<sup>e</sup></i>	360000	plant	5000	plant	15000	plant	18000	plant	19000	plant	11000	plant	4400	plant	4400	plant	4000	plant
<i>NE-ESL (A/I)<sup>e</sup></i>	48000	earthworm	190	earthworm	1400	robin	820	earthworm	870	earthworm	340	American robin	2200	earthworm	1600	earthworm	1100	earthworm
<i>LE-ESL (A/I)<sup>e</sup></i>	480000	earthworm	1900	earthworm	14000	robin	8200	earthworm	8700	earthworm	3400	American robin	22000	earthworm	16000	earthworm	11000	earthworm

<sup>a</sup>Bold values are radionuclides that were detected and above the RSRL.

<sup>b</sup>See Appendix B for an explanation of the presence of negative values.

<sup>c</sup>Duplicate/split sample; soil was homogenized in a bag and two samples were collected from that mixture.

<sup>d</sup>Regional Statistical Reference Level; this is the upper-limit background concentration (mean + 3 standard deviation) based on data from 2009 to 2018 (last 10 years) (n=24).

<sup>e</sup>Ecological Screening Levels (ESL) - No Effect (NE) level and Lowest Effect (LE) level for plants and animal/invertebrate (A/I) (LANL 2017).

#### References

LANL (Los Alamos National Laboratory). 2017. "ECORISK Database," Release 4.1, Los Alamos National Laboratory database, <http://www.lanl.gov/environment/protection/eco-risk-assessment.php>, accessed May 2018.

**Table S7-2. Concentrations of selected radionuclides in native overstory vegetation (branches plus needles) collected around the perimeter of Area G in 2019.**

Location	<sup>3</sup> H pCi/mL		<sup>241</sup> Am pCi/g		<sup>137</sup> Cs pCi/g		<sup>238</sup> Pu pCi/g		<sup>239,240</sup> Pu pCi/g		<sup>90</sup> Sr pCi/g		<sup>234</sup> U pCi/g		<sup>235/236</sup> U pCi/g		<sup>238</sup> U pCi/g	
	Result <sup>a</sup>	Detected	Result <sup>b</sup>	Detected	Result	Detected	Result	Detected	Result	Detected	Result	Detected	Result	Detected	Result	Detected	Result	Detected
21-01	0.68	Y	-0.0010	N	-0.5300	N	0.0017	Y	0.0088	Y	2.580	Y	0.0960	Y	0.0062	Y	0.2360	Y
26-01	1.85	Y	<b>0.6570</b>	Y	-0.3200	N	0.0015	N	0.0074	Y	2.810	Y	0.0739	Y	0.0047	Y	0.1570	Y
29-03	<b>296</b>	Y	0.0005	N	0.3300	N	0.0021	Y	0.0064	Y	<b>3.360</b>	Y	0.0803	Y	0.0052	Y	0.1230	Y
30-01	<b>748</b>	Y	0.0030	N	0.0900	N	0.0013	N	0.0027	Y	2.590	Y	0.0646	Y	0.0070	Y	0.1130	Y
32-02	<b>23.4</b>	Y	-0.0005	N	-0.1800	N	0.0017	Y	0.0029	Y	<b>5.310</b>	Y	0.0945	Y	0.0070	Y	0.0983	Y
36-02	<b>9.81</b>	Y	0.0003	N	-0.1700	N	0.0005	N	0.0043	N	<b>3.650</b>	Y	0.0608	Y	0.0055	Y	0.0762	Y
38-01	0.76	Y	0.0062	N	-0.3300	N	0.0043	Y	0.0105	Y	<b>3.380</b>	Y	0.0530	Y	0.0039	N	0.0948	Y
40-01	0.27	N	0.0043	N	-0.4800	N	0.0094	Y	0.0099	Y	2.990	Y	0.0675	Y	0.0032	N	0.0769	Y
42-01	0.34	Y	0.0048	N	-0.1000	N	0.0126	Y	0.0103	Y	<b>3.740</b>	Y	0.0663	Y	0.0035	N	0.1090	Y
45-05	0.71	Y	0.0021	N	-0.1300	N	0.0124	Y	<b>0.0154</b>	Y	<b>5.090</b>	Y	0.0672	Y	0.0020	N	0.1570	Y
48-01	2.52	Y	0.0033	N	0.2500	N	0.0048	N	<b>0.0197</b>	Y	<b>4.710</b>	Y	0.1000	Y	0.0086	Y	0.1920	Y
52-01	0.59	Y	-0.0024	N	-0.0900	N	0.0046	Y	<b>0.0254</b>	Y	2.420	Y	0.0970	Y	0.0046	Y	0.1970	Y
58-01	<b>10.53</b>	Y	0.0028	N	-0.1600	N	-0.0042	N	<b>0.1510</b>	Y	<b>3.190</b>	Y	0.0980	Y	0.0069	Y	0.1110	Y
T-3B	0.46	N	-0.0016	N	-0.2300	N	0.0024	N	<b>0.0186</b>	Y	0.7830	Y	0.0235	Y	0.0008	N	0.0406	Y
<i>RSRL<sup>c</sup></i>	2.94		0.0142		0.6857		0.0156		0.0118		3.181		0.6393		0.0320		0.6544	
<i>BDSL<sup>d</sup></i>	345000		778		103111		822		822		53750		889		889		987	

<sup>a</sup>Bold values indicate detectable concentrations above the regional statistical reference level.

<sup>b</sup>See Appendix B for an explanation of the presence of negative values.

<sup>c</sup>Regional Statistical Reference Level; this is the upper-limit background concentration (mean + 3 standard deviation) based on data from 2009 to 2018 (last 10 years) (n=24).

<sup>d</sup>Biota Dose Screening Level is 10% of the DOE no effect level of 0.1 rad/d for animals, or 0.01 rad/d (DOE 2019).

#### References

DOE (Department of Energy). 2019. "A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota," U.S. Department of Energy report DOE-STD-1153-2019.

Table S7-3. Radionuclide concentrations in soil (0- to 2-inch depth) and sediment (0- to 6-inch depth) collected around the perimeter of the DARHT facility in 2019.

Media/ Location	<sup>3</sup> H		<sup>241</sup> Am		<sup>137</sup> Cs		<sup>238</sup> Pu		<sup>239,240</sup> Pu		<sup>90</sup> Sr		<sup>234</sup> U		<sup>235/236</sup> U		<sup>238</sup> U	
	Result <sup>a</sup>	pCi/g	Result <sup>a</sup>	pCi/g	Result	pCi/g	Result <sup>b</sup>	pCi/g	Result	pCi/g	Result	pCi/g	Result	pCi/g	Result	pCi/g	Result	pCi/g
<b>Soil</b>																		
East	0.0270	N	-0.0033	N	0.1900	N	0.0000	N	0.0187	Y	0.1790	Y	<b>3.330</b>	Y	<b>0.1740</b>	Y	<b>4.060</b>	Y
South	0.0130	N	0.0006	N	-0.0390	N	0.0045	N	0.0022	N	0.0470	N	0.856	Y	0.0490	Y	0.980	Y
West	0.0160	N	-0.0001	N	0.1650	N	0.0021	N	0.0129	Y	0.0740	N	1.400	Y	0.0780	Y	<b>1.630</b>	Y
North	0.0280	N	0.0060	N	0.2580	Y	-0.0014	N	0.0194	Y	0.1310	Y	<b>3.640</b>	Y	<b>0.1610</b>	Y	<b>4.290</b>	Y
North FS	-0.0020	N	0.0052	N	-0.0430	N	0.0011	N	0.0011	N	0.2590	Y	<b>1.940</b>	Y	<b>0.2060</b>	Y	<b>9.450</b>	Y
<b>Sediment</b>																		
East	0.0070	N	-0.0017	N	0.2210	N	0.0000	N	0.0082	N	0.0620	N	<b>2.440</b>	Y	<b>0.1220</b>	Y	<b>4.810</b>	Y
Southwest	-0.0020	N	0.0013	N	-0.0480	N	0.0023	N	0.0035	Y	0.0150	N	0.858	Y	0.0540	Y	1.009	Y
South	0.0070	N	-0.0016	N	0.0490	N	<b>0.0078</b>	Y	0.0048	N	0.0410	N	<b>3.330</b>	Y	<b>0.3410</b>	Y	<b>21.200</b>	Y
North	-0.0020	N	0.0036	N	0.0510	N	<b>0.0096</b>	Y	0.0096	Y	-0.0820	N	<b>2.420</b>	Y	<b>0.1070</b>	Y	<b>3.330</b>	Y
<b>Screening Levels</b>																		
<i>BSRL<sup>c</sup></i>	0.690	NA	0.010	NA	0.360	NA	0.004	NA	0.023	NA	0.800	NA	3.10	NA	0.130	NA	2.80	NA
<i>RSRL<sup>d</sup></i>	0.07	NA	0.019	NA	0.73	NA	0.031	NA	0.057	NA	0.422	NA	1.50	NA	0.079	NA	1.48	NA
<i>NE-ESL (Plant)<sup>e</sup></i>	36000	plant	500	plant	1500	plant	1800	plant	1900	plant	1100	plant	440	plant	440	plant	400	plant
<i>LE-ESL (Plant)<sup>e</sup></i>	360000	plant	5000	plant	15000	plant	18000	plant	19000	plant	11000	plant	4400	plant	4400	plant	4000	plant
<i>NE-ESL (A/I)<sup>e</sup></i>	48000	earthworm	190	earthworm	1400	American robin	820	earthworm	870	earthworm	340	American robin	2200	earthworm	1600	earthworm	1100	earthworm
<i>LE-ESL (A/I)<sup>e</sup></i>	480000	earthworm	1900	earthworm	14000	American robin	8200	earthworm	8700	earthworm	3400	American robin	22000	earthworm	16000	earthworm	11000	earthworm

<sup>a</sup>See Appendix B for an explanation of the presence of negative values.

<sup>b</sup>Bold values are radionuclides that were detected and above the BSRL, RSRL, and/or NE-ESL.

<sup>c</sup>Baseline statistical reference level; this is the upper limit background concentration (mean + 3 standard deviation) based on Fresquez et al. 2001.

<sup>d</sup>Regional Statistical Reference Level; this is the upper-limit background concentration (mean + 3 standard deviation) for soil based on data from 2003 to 2015 (n=28).

<sup>e</sup>Ecological Screening Levels (ESL) - No Effect (NE) level and Lowest Effect (LE) level for plants and animal/invertebrate (A/I) (LANL 2017).

#### References

- Fresquez, P.R., J.W. Nyhan, and H.T Haagenstad. 2001. "Baseline concentrations of radionuclides and trace elements in soils, sediments, vegetation, small mammals, birds, and bees around the DARHT Facility; construction phase (1996 through 1999)," Los Alamos National Laboratory report LA-13808-MS. LANL (Los Alamos National Laboratory). 2017. "ECORISK Database," Release 4.1, Los Alamos National Laboratory database, <http://www.lanl.gov/environment/protection/eco-risk-assessment.php>, accessed May 2018.



Table S7-5. High explosive concentrations (mg/kg) in soil (0- to 2-inch depth) and sediment (0- to 6-inch depth) collected from within and around the perimeter of the DARTH Facility in 2019.

Location	2,4-Dinitro-6-nitrotoluene		2,6-Dinitro-4-nitrotoluene		3,5-Dinitrotoluene		Amino-2,6-dinitrotoluene(2,1)		Bis(2,4-dinitrophenyl)(2,1)		Bis(2,4-dinitrophenyl)(3,2)		Bis(2,4-dinitrophenyl)(4,4)		Bis(2,4-dinitrophenyl)(2,6-1)		HMX	Nitrobenzene		Nitroethane(2,1)		Nitroethane(3,1)		Nitroethane(4,1)		PETN		RDX		TATB		Tetrad		Trinitrobenzene(1,3,5-3)		Trinitrobenzene(2,4,6-3)		Tris(2,4-dinitrophenyl)	
	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected	meke	Detected					
Soil																																							
East	0.485	N	0.635	N	0.290	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N			
South	0.488	N	0.644	N	0.293	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N			
West	0.493	N	0.659	N	0.296	N	0.148	N	0.148	N	0.148	N	0.148	N	0.148	N	0.148	N	0.148	N	0.148	N	0.148	N	0.148	N	0.148	N	0.148	N	0.148	N	0.148	N	0.148	N			
North	0.478	N	0.649	N	0.294	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N			
North FS	0.483	N	0.639	N	0.290	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N	0.145	N			
Sediment																																							
East	0.408	N	0.657	N	0.299	N	0.149	N	0.149	N	0.149	N	0.149	N	0.149	N	0.149	N	0.149	N	0.149	N	0.149	N	0.149	N	0.149	N	0.149	N	0.149	N	0.149	N	0.149	N			
Southwest	0.488	N	0.644	N	0.293	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N	0.146	N			
South	0.478	N	0.632	N	0.287	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N	0.144	N			
North	0.490	N	0.647	N	0.294	N	0.147	N	0.147	N	0.147	N	0.147	N	0.147	N	0.147	N	0.147	N	0.147	N	0.147	N	0.147	N	0.147	N	0.147	N	0.147	N	0.147	N	0.147	N			
Screening Levels	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg	Receptor	mg/kg
NE-ESL (Plant)*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LE-ESL (Plant)*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NE-ESL (Off)*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LE-ESL (Off)*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

\*bold values are concentrations that were not detected but the detection limit was higher than the lowest NE-ESL and LE-ESL.

\*Ecological Screening Levels (ESL) - No Effect (NE) level and Lowest Effect (LE) level for plants and animal vertebrates (AV) (LANL, 2017).

## References

LANL (Los Alamos National Laboratory). 2017. "ECIRISK Database," Release 4.1, Los Alamos National Laboratory database, <http://www.lanl.gov/environment/protection/icc-risk-assessment.php>, accessed May 2018.

**Table S7-6. Dioxin and Furan concentrations (mg/kg) in soil collected at the firing site at the DARHT Facility in 2019.**

Dioxins	North FS	NE-ESL (A/I) <sup>a</sup>	LE-ESL (A/I) <sup>b</sup>	Receptor
	mg/kg	Detected	mg/kg	
Tetrachlorodibenzodioxin[2,3,7,8-]	0.000000144	N	0.00000029	0.00000019
Tetrachlorodibenzodioxins (Total)	0.000000000	N	NA	NA
Pentachlorodibenzodioxin[1,2,3,7,8-]	0.000000460	N	NA	NA
Pentachlorodibenzodioxins (Total)	0.000000000	N	NA	NA
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	0.000000460	N	NA	NA
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	0.000000460	N	NA	NA
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	0.000000460	N	NA	NA
Hexachlorodibenzodioxins (Total)	0.000000000	N	NA	NA
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	0.000001100	Y	NA	NA
Heptachlorodibenzodioxins (Total)	0.000001100	Y	NA	NA
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	0.000007000	Y	NA	NA
<b>Furans</b>				
Tetrachlorodibenzofuran[2,3,7,8-]	0.000000202	N	NA	NA
Tetrachlorodibenzofurans (Totals)	0.000000000	N	NA	NA
Pentachlorodibenzofuran[1,2,3,7,8-]	0.000000460	N	NA	NA
Pentachlorodibenzofuran[2,3,4,7,8-]	0.000000460	N	NA	NA
Pentachlorodibenzofurans (Totals)	0.000000000	N	NA	NA
Hexachlorodibenzofuran[1,2,3,4,7,8-]	0.000000460	N	NA	NA
Hexachlorodibenzofuran[1,2,3,6,7,8-]	0.000000460	N	NA	NA
Hexachlorodibenzofuran[1,2,3,7,8,9-]	0.000000460	N	NA	NA
Hexachlorodibenzofuran[2,3,4,6,7,8-]	0.000000460	N	NA	NA
Hexachlorodibenzofurans (Total)	0.000000000	N	NA	NA
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	0.000000460	N	NA	NA
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	0.000000460	N	NA	NA
Heptachlorodibenzofurans (Total)	0.000000000	N	NA	NA
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	0.000000920	N	NA	NA

<sup>a</sup>No Effect Ecological Screening Level (Animal/Invertebrate) (LANL 2017).

<sup>b</sup>Low effect Ecological Screening Level (Animal/Invertebrate) (LANL 2017).

#### References

LANL (Los Alamos National Laboratory). 2017. "ECORISK Database," Release 4.1, Los Alamos National Laboratory database, <http://www.lanl.gov/environment/protection/eco-risk-assessment.php>, accessed May 2018.

Table S7-7. Total analyte list concentrations (mg/kg dry weight) in a mountain bluebird egg and isotopic plutonium and uranium activities in a bluebird nestling collected from around the DARHT Facility in 2019.

Element	Mountain bluebird (n=1 egg) SFB-19-184804			Western bluebird (n=1 nestling) SFB-19-184808			Mountain bluebird (n=1 nestling) SFB-19-184809					
	mg/kg dry <sup>a</sup>	Detected	RSRL <sup>a</sup>	LOAEL <sup>b</sup>	Radionuclides	pCi/g ash <sup>f</sup>	Detected	pCi/g ash	Detected	RSRL	BDSL <sup>d</sup>	
Aluminum	9.1	N		17.2	NA	Plutonium-238	0.0260	N	0.0043	N	0.0147	38.9
Antimony	0.14	Y		0.26	NA	Plutonium-239/240	0.0075	N	-0.0021	N	0.0242	38.9
Arsenic	0.096	N		0.170	NA	Uranium-234	0.2210	Y	0.2550	Y	0.4592	42.0
Barium	7.9	Y		31.0	NA	Uranium-235/236	0.0140	Y	0.0162	Y	0.0587	42.0
Beryllium	0.17	N		0.315	NA	Uranium-238	<b>0.2700</b>	Y	<b>0.2250</b>	Y	0.1967	46.6
Cadmium	0.085	N		0.153	NA							
Calcium	4100	Y		5637	NA							
Chromium	1	N		1.74	NA							
Cobalt	0.037	N		0.354	NA							
Copper	3.1	Y		4.9	NA							
Iron	81	Y		274	NA							
Lead	0.23	N		0.40	NA							
Magnesium	410	Y		436	NA							
Manganese	0.8	Y		4.47	NA							
Mercury	0.022	Y		0.143	2.0							
Nickel	0.61	N		1.18	NA							
Potassium	10000	Y		11035	NA							
Selenium	2.3	Y		3.3	8.0							
Silver	0.022	N		0.040	NA							
Sodium	10000	Y		10561	NA							
Thallium	0.013	N		0.0222	NA							
Vanadium	0.077	N		0.369	NA							
Zinc	53	Y		96	NA							

<sup>a</sup>Regional Statistical Reference Level (RSRL); this is the upper-limit background concentration (mean + 3 standard deviation) for passerine eggs based on data from 2016 to 2019 (n=23) and nestlings based on data collected in 2019 (n=3)

<sup>b</sup>Lowest Observable Adverse Effect Level (LOAEL); concentrations on an element in a tissue associated with adverse effect (mercury\*: Shore et al. 2011; selenium: Ohlendorf and Heinz, 2011; \*concentration was converted from wet weight to dry weight Heinz et al. 1989)

<sup>c</sup>Bold values indicate a detectable concentration which is higher than the Regional Statistical Reference Level.

<sup>d</sup>Biota Dose Screening Level (BDSL) is 10% of the DOE no effect level of 0.1 rad/d for animals (or 0.01 rad/d) (DOE 2019).

#### References

- DOE (Department of Energy). 2019. "A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota." U.S. Department of Energy report DOE-STD-1153-2019.
- Heinz, G.H., D.J. Hoffman, and L.G. Gold. 1989. "Impaired reproduction of mallards fed an organic form of selenium," *The Journal of Wildlife*, 53: 418-428.
- Ohlendorf, H.M. and G.H. Heinz. 2011. "Selenium in Birds," Pp. 669-701 in Beyer W.N. and J.P. Meador eds. *Environmental Contaminants in Biota Interpreting Tissue Concentrations*, 2<sup>nd</sup> Edition. CRC Press Boca Raton, Florida.
- Shore, R.F., M.G. Pereira, L.A. Walker, and D.R. Thompson. 2011. "Mercury in Nonmarine Birds and Mammals. Pp. 609-624 in Beyer W.N. and J.P. Meador eds. *Environmental Contaminants in Biota Interpreting Tissue Concentrations*, 2<sup>nd</sup> Edition. CRC Press Boca Raton, Florida.

Table S7-8. Total analyte list concentrations and radionuclides in a honey bee sample and a honey sample collected from around the DARHT Facility in 2019.

Element	Honey Bees SFB-19-167580		RSRL <sup>b</sup>	Honey SFB-19-170120		Background Honey (n=1) SFB-19-184178		DARHT Honey Bees SFB-19-167580		Background Honey Bees (n=1) SFBDARHT-12-23553		DARHT Honey SFB-19-170120		Background Honey (n=1) SFB-19-184178			
	mg/kg <sup>a</sup>	Detected		mg/kg	mg/kg <sup>a</sup>	Detected	mg/kg	Detected	Result	Detected	Results	Detected	BDSL <sup>c</sup>	Result	Detected	Result	Detected
Aluminum	7.90	Y	40.4		6.48	N	5.90	Y	Americium-241	pCi/g	0.0460	N	161	-0.0014	N	-0.00410	N
Antimony	0.0450	Y		0.0460	0.3140	N	0.1200	Y	Cesium-137	pCi/g	-3.0000	N	21.324	0.0001	N	0.51000	N
Arsenic	0.0360	N		0.0914	0.3100	N	0.0360	N	Plutonium-238	pCi/g	0.0190	N	170	0.0029	N	0.00310	N
Barium	3.00	Y		128	0.5820	Y	0.1900	Y	Plutonium-239/240	pCi/g	0.0560	N	170	0.0029	N	0.00720	Y
Beryllium	0.0610	N		0.0556	0.0183	N	0.0620	N	Stron튬-90	pCi/g	-0.0100	N	15.809	0.0094	N	0.04600	N
Cadmium	<b>0.0430</b>	Y		0.0282	0.0952	N	0.0320	N	Tritium	pCi/mL	0.7200	Y	34.500	0.9270	N	0.23000	N
Calcium	1200	Y		1222	96.1	Y	43.0	N	Uranium-234	pCi/g	0.1990	Y	184	0.0101	N	0.04230	Y
Chromium	0.3800	N		0.2939	0.1430	N	0.3800	N	Uranium-235/236	pCi/g	0.0270	N	184	0.0229	N	0.00540	N
Cobalt	<b>0.0690</b>	Y		0.0656	0.1430	N	0.0140	N	Uranium-238	pCi/g	0.2150	Y	204	0.0154	N	0.02210	Y
Copper	19.0	Y		29.7	0.3060	Y	0.1400	Y									
Iron	73.0	Y		94.2	7.62	N	37.0	Y									
Lead	<b>0.0810</b>	Y		0.0558	0.3140	N	0.1100	Y									
Magnesium	<b>1100</b>	Y		867	63.7	Y	13.0	Y									
Manganese	21.0	Y		28.6	0.8340	Y	0.3100	Y									
Mercury	0.00006	N		0.0098	0.0394	N	0.0001	N									
Nickel	0.2400	Y		0.7250	0.2730	Y	0.2300	N									
Potassium	<b>13000</b>	Y		8033	752	Y	260	Y									
Selenium	0.5000	Y		1.38	0.3300	N	0.3200	N									
Silver	0.0083	N		0.0021	0.0952	N	0.0084	N									
Sodium	600	Y		1215	16.2	Y	47	N									
Thallium	0.00480	N		0.0046	0.1280	N	0.0049	N									
Vanadium	0.02900	N		0.2938	0.0952	N	0.0290	N									
Zinc	78.0	Y		145.1	6.90	Y	1.50	Y									

<sup>a</sup>Bold values indicate a detectable concentration which is higher than the Regional Statistical Reference Level.

<sup>b</sup>Regional Statistical Reference Level (RSRL); this is the upper-limit background concentration (mean + 3 standard deviation) for bees based on data collected from 2010 to 2012 (n=4).

<sup>c</sup>Biota Dose Screening Level (BDSL) is 10% of the DOE no effect level of 0.1 rad/d for animals (or 0.01 rad/d) (DOE 2019).

#### References

DOE (Department of Energy). 2019. "A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota." U.S. Department of Energy report DOE-STD-1153-2019.

Table S7-9. Total analyte list concentrations in passerine eggs collected from firing sites during 2019. Results are reported on a dry weigh basis.

TA-16 Bare Grounds		Aluminum <sup>a</sup> mg/kg Detected	Antimony <sup>a</sup> mg/kg Detected	Arsenic mg/kg Detected	Barium mg/kg Detected	Beryllium mg/kg Detected	Cadmium mg/kg Detected	Calcium mg/kg Detected	Chromium mg/kg Detected	Cobalt mg/kg Detected	Copper mg/kg Detected	Iron mg/kg Detected	Lead mg/kg Detected	Magnesium mg/kg Detected	Manganese mg/kg Detected	Mercury mg/kg Detected	Nickel mg/kg Detected	Potassium mg/kg Detected	Selenium mg/kg Detected	Sodium mg/kg Detected	Thallium mg/kg Detected	Vanadium mg/kg Detected	Zinc mg/kg Detected	
Sample ID	Species (number of eggs)																							
SFB-19-134755	Western Bluebird (2)	4.00	N	0.110	Y	0.043	N	24	Y	0.074	N	0.038	N	0.017	N	3.10	Y	180	Y	0.032	Y	2.7	Y	
SFB-19-134766	Western Bluebird (5)	1.70	N	0.057	Y	0.018	N	68	Y	0.031	N	0.016	N	2500	Y	0.20	Y	0.088	Y	2.30	Y	170	Y	
SFB-19-134767	Western Bluebird (3)	1.80	N	0.043	Y	0.009	N	210	Y	0.034	N	0.013	N	3809	Y	0.21	Y	0.048	Y	2.30	Y	249	Y	
SFB-19-134788	Western Bluebird (1)	7.80	N	0.270	Y	0.083	N	Y	0.140	N	0.074	N	3800	Y	0.87	N	0.046	Y	3.90	Y	130	Y		
SFB-19-134789	Western Bluebird (4)	2.00	N	0.076	Y	0.021	N	11	Y	0.036	N	0.019	N	2900	Y	0.22	N	0.041	Y	3.30	Y	120	Y	
SFB-19-134790	Western Bluebird (5)	1.80	N	0.081	Y	0.019	N	34	Y	0.033	N	0.017	N	2600	Y	0.22	Y	0.063	Y	2.80	Y	150	Y	
TA-36 Mosaic		Aluminum <sup>a</sup> mg/kg Detected	Antimony <sup>a</sup> mg/kg Detected	Arsenic mg/kg Detected	Barium mg/kg Detected	Beryllium mg/kg Detected	Cadmium mg/kg Detected	Calcium mg/kg Detected	Chromium mg/kg Detected	Cobalt mg/kg Detected	Copper mg/kg Detected	Iron mg/kg Detected	Lead mg/kg Detected	Magnesium mg/kg Detected	Manganese mg/kg Detected	Mercury mg/kg Detected	Nickel mg/kg Detected	Potassium mg/kg Detected	Selenium mg/kg Detected	Sodium mg/kg Detected	Thallium mg/kg Detected	Vanadium mg/kg Detected	Zinc mg/kg Detected	
Sample ID	Species (number of eggs)																							
SFB-19-134791	Mountain Bluebird (5)	1.60	N	1.60	N	0.017	N	15	Y	0.030	N	0.015	N	3100	Y	0.200	Y	0.049	Y	2.80	Y	140	Y	
TA-39		Aluminum <sup>a</sup> mg/kg Detected	Antimony <sup>a</sup> mg/kg Detected	Arsenic mg/kg Detected	Barium mg/kg Detected	Beryllium mg/kg Detected	Cadmium mg/kg Detected	Calcium mg/kg Detected	Chromium mg/kg Detected	Cobalt mg/kg Detected	Copper mg/kg Detected	Iron mg/kg Detected	Lead mg/kg Detected	Magnesium mg/kg Detected	Manganese mg/kg Detected	Mercury mg/kg Detected	Nickel mg/kg Detected	Potassium mg/kg Detected	Selenium mg/kg Detected	Silver mg/kg Detected	Sodium mg/kg Detected	Thallium mg/kg Detected	Vanadium mg/kg Detected	Zinc mg/kg Detected
Sample ID	Species (number of eggs)																							
SFB-19-134792	Western Bluebird (4)	2.40	N	0.170	Y	0.025	N	10	Y	0.048	N	0.025	N	3100	Y	0.200	Y	0.049	Y	3.40	Y	0.011	Y	
RSRL (mg/kg) <sup>b</sup>		17.2	0.264	0.170	31	0.315	0.153	5637	1.74	0.354	4.85	274	0.405	436	4.47	0.143	1.18	11035	3.3	0.040	10561	0.0222	0.369	95.8
LOAEL (mg/kg) <sup>c</sup>		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

<sup>a</sup>Al, Ba, Be, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, V and Zn by method SW6010B and analyzed by ICP; Sb, As, Cd, Pb, Sc, Ag and Th by method SW6020B and analyzed by ICPMS; Hg by method SW7471 and analyzed by cold vapor AA.<sup>b</sup>Bold values indicated a detectable concentration which is higher than the regional statistical reference level.<sup>c</sup>Regional Statistical Reference Level (RSRL); this is the upper-lim background concentration (mean + 3 standard deviation) for passerine eggs based on data from 2016-2019 ( $n = 23$ ).<sup>d</sup>Lowest Observable Adverse Effect Level (LOAEL); concentrations of an element in a tissue associated with adverse effect (nocebo\*). Shaw et al. 2011; selenium: Ohnsdorf and Heinz, 2011; \*concentration was converted from wet weight to dry weight Heinz et al. 1989).

References

Heinz, G.H., D.J. Hoffman, and L.G. Gold. 1999. "Infrared transmission of inductively coupled atomic beam ICP-atomic emission." *The Journal of Wildlife*, 53: 419-425.Ohnsdorf, H.M. and G.H. Heinz. 2011. "Selenium in Birds." Pp. 669-701 in Beyer, W.N. and J.P. Meador (eds.) *Environmental Contaminants in Biota Interpreting Tissue Concentrations*. 2<sup>nd</sup> Edition. CRC Press Boca Raton, Florida.Shore, R.F., M.G. Frewer, L.A. Walker, and D.R. Thompson. 2011. "Mercury in Nonmigrant Birds and Mammals." Pp. 669-624 in Beyer, W.N. and J.P. Meador (eds.) *Environmental Contaminants in Biota Interpreting Tissue Concentrations*. 2<sup>nd</sup> Edition. CRC Press Boca Raton, Florida.

**Table S7-10. Total analyte list concentrations (mg/kg) in native understory vegetation collected on the upgradient side of the Los Alamos Canyon Weir in 2019.**

Element <sup>a</sup>	Result <sup>a</sup>	Detected	RSRL <sup>b</sup>
Aluminum	6.80	Y	634
Antimony	0.0290	Y	0.1988
Arsenic	0.0460	N	0.3582
Barium	13.0	Y	141
Beryllium	0.0590	N	0.1091
Cadmium	0.0300	N	0.4549
Calcium	5100	Y	22556
Chromium	0.3600	Y	0.8120
Cobalt	0.0130	N	0.8051
Copper	4.90	Y	11.2
Iron	50.0	Y	767
Lead	0.7300	Y	1.27
Magnesium	1300	Y	5962
Manganese	18.0	Y	234
Mercury	0.00005	Y	0.0174
Nickel	0.3100	N	4.22
Potassium	16000	Y	66655
Selenium	0.3000	N	2.58
Silver	0.0080	N	0.0265
Sodium	120	Y	7213
Thallium	0.0095	N	0.0914
Vanadium	0.0280	Y	1.54
Zinc	21.0	Y	46.3

<sup>a</sup>Al, Ba, Be, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, V and Zn by method SW6010B and analyzed by ICP; Sb, As, Cd, Pb, Sb, Se, Ag and Th by method SW6020B and analyzed by ICPMS; Hg by method SW7471 and analyzed by cold vapor AA.

<sup>b</sup>Regional Statistical Reference Level (RSRL); this is the upper-limit regional background concentration (mean + 3 standard deviation) based on data from 2009 through 2018 data (n=24).

**Table S7-11. Radionuclide concentrations in native understory vegetation collected on the upgradient side of the Los Alamos Canyon Weir in 2019.**

Radionuclide	Units	Result <sup>a</sup>	Detected	RSRL <sup>b</sup>	BDSL <sup>c</sup>
Americium-241	pCi/g ash	0.0052	N	0.0142	547
Cesium-137	pCi/g ash	0.6700	N	0.6857	72500
Plutonium-238	pCi/g ash	0.0009	N	0.0156	578
Plutonium-239/240	pCi/g ash	0.0073	Y	0.0118	578
Strontium-90	pCi/g ash	<b>3.810</b>	Y	3.181	53750
Tritium	pCi/mL	0.1700	N	2.937	345000
Uranium-234	pCi/g ash	0.0217	Y	0.6393	625
Uranium-235/236	pCi/g ash	0.0043	Y	0.0320	625
Uranium-238	pCi/g ash	0.0127	Y	0.6544	694

<sup>a</sup>Bold values are detectable concentrations that are higher than the Regional Statistical Reference Level.

<sup>b</sup>Regional Statistical Reference Level; this is the upper-limit background concentration (mean + 3 standard deviation) based on data from 2009 to 2018 (last 10 years) (n=24).

<sup>c</sup>Biota Dose Screening Level is 10% of the DOE no effect level of 0.1 rad/d for animals, or 0.01 rad/d (DOE 2019).

#### References

DOE (Department of Energy). 2019. “A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota,” U.S. Department of Energy report DOE-STD-1153-2019.

**Table S7-12. Radionuclide concentrations in a wood rat collected on the upgradient side of the Los Alamos Canyon Weir in 2019.**

Radionuclide	Units	Upgradient <sup>a,b</sup>	Detected	RSRL <sup>c</sup>	BDSL <sup>d</sup>
Americium-241	pCi/g ash	0.0061	N	0.0116	40
Cesium-137	pCi/g ash	0.4200	N	0.1456	5333
Plutonium-238	pCi/g ash	0.0009	N	0.0060	42
Plutonium-239/240	pCi/g ash	<b>0.0179</b>	Y	0.0128	42
Strontium-90	pCi/g ash	<b>3.430</b>	Y	0.4324	3954
Tritium	pCi/mL	-0.0370	N	0.5310	34500
Uranium-234	pCi/g ash	0.0337	Y	0.0901	46
Uranium-235/236	pCi/g ash	0.0026	Y	0.0067	46
Uranium-238	pCi/g ash	0.0279	Y	0.0763	46

<sup>a</sup>See Appendix B for an explanation of the presence of negative values.

<sup>b</sup>Bold values are detectable activities that are higher than the Regional Statistical Reference Level.

<sup>c</sup>Regional Statistical Reference Level (RSRL); this is the upper-limit regional background concentration (mean + 3 standard deviation) based on 2007-2018 (n = 3).

<sup>d</sup>Biota Dose Screening Level is 10% of the DOE no effect level of 0.1 rad/d for animals, or 0.01 rad/d (DOE 2019).

#### References

DOE (Department of Energy). 2019. “A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota,” U.S. Department of Energy report DOE-STD-1153-2019.

**Table S7-13.** Total analyte list concentrations (mg/kg) in whole body mouse samples collected upgradient of the Los Alamos Canyon Weir in 2019.

Field Sample ID	Upgradient						
	Deer mouse (male)		Western Harvest mouse (female)		Western Harvest mouse (male)		
	SFB-19-181439	SFB-19-181438	SFB-19-181437				
Element <sup>a</sup>	mg/kg <sup>b</sup>	Detected	mg/kg	Detected	mg/kg	Detected	RSRL <sup>c</sup>
Aluminum	41.0	Y	14.0	Y	26.0	Y	110
Antimony	0.0270	Y	0.0180	N	0.0210	N	0.3192
Arsenic	0.0380	N	0.0067	N	0.0130	N	0.0837
Barium	7.60	Y	1.70	Y	2.10	Y	13.6
Beryllium	0.0062	N	0.0037	N	0.0065	N	0.0372
Cadmium	0.0360	N	0.0090	N	0.0042	N	0.0424
Calcium	10000	Y	6600	Y	6500	Y	16734
Chromium	0.4200	Y	0.2200	N	0.3600	Y	0.5644
Cobalt	0.0550	Y	0.0250	Y	0.0380	N	0.0760
Copper	2.90	Y	2.50	Y	2.30	Y	3.53
Iron	100	Y	86.0	Y	91	Y	206
Lead	0.3000	Y	0.1900	Y	0.1700	Y	5.61
Magnesium	280	Y	260	Y	320	Y	477
Manganese	4.50	Y	1.80	Y	3.00	Y	7.12
Mercury	<b>0.0220</b>	Y	0.0017	Y	0.0015	Y	0.0149
Nickel	0.0550	Y	0.0460	Y	0.1100	Y	0.4998
Potassium	2900	Y	2700	Y	2800	Y	3936
Selenium	<b>0.5800</b>	Y	0.170	Y	0.1100	Y	0.4570
Silver	0.0046	N	0.001	N	0.0074	N	0.0140
Sodium	1500	Y	1500	Y	1200	Y	2064
Thallium	0.0240	N	0.0021	N	0.0014	N	0.0047
Vanadium	0.0640	N	0.0240	N	0.0600	N	0.2754
Zinc	100	Y	83.0	Y	79.0	Y	178

<sup>a</sup>Al, Ba, Be, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, V and Zn by method SW6010B and analyzed by ICP; Sb, As, Cd, Pb, Sb, Se, Ag and Th by method SW6020B and analyzed by ICPMS; Hg by method SW7471 and analyzed by cold vapor AA.

<sup>b</sup>Bold values are detectable concentration that are higher than the Regional Statistical Reference Level.

<sup>c</sup>Regional Statistical Reference Level (RSRL); this is the upper-limit regional background concentration (mean + 3 standard deviation) based on 2007-2018 (n = 14).

Table S7-14. Total polychlorinated biphenyls (PCB; (mg/kg) in whole body deer mice samples collected upgradient of the Los Alamos Canyon Weir in 2019.

Field Sample ID	Upgradient				
	Deer mouse (male) SFB-19-181440	Deer mouse (male) SFB-19-181441	Deer mouse (male) SFB-19-181442	RSRL <sup>b</sup>	LOAEL <sup>c</sup>
	Result <sup>a</sup>	Result	Result		
Total PCB	<b>0.0394</b>	<b>0.1072</b>	<b>0.0177</b>	0.0129	2.5

<sup>a</sup>Bold indicates values detected and are above the Regional Statistical Reference Level.

<sup>b</sup>Regional Statistical Reference Level (RSRL); this is the upper-limit regional background concentration (mean + 3 standard deviation) based on 2008-2018 (n = 16).

<sup>c</sup>Lowest Observable Adverse Effect Level (LOAEL); concentrations of PCBs in small mammal tissues associated with adverse effect (Batty et al. 1990)

#### References

Batty, J., R.A. Leavitt, N. Biondado, and D. Polin. 1990. "An Ecotoxicological Study of a Population of the White-Footed Mouse (*Peromyscus leucopus*) Inhabiting a Polychlorinated Biphenyls-Contaminated Area." *Archives of Environmental Contamination and Toxicology*, 19:283–290.

**Table S7-15. Radionuclide concentrations in native understory vegetation collected on the upgradient side of the Pajarito Flood Retention Structure in 2019.**

Radionuclide	Units	Result <sup>a</sup>	Detected	RSRL <sup>b</sup>	BDSL <sup>c</sup>
Americium-241	pCi/g ash	-0.0014	N	0.0142	547
Cesium-137	pCi/g ash	-0.1100	N	0.6857	72500
Plutonium-238	pCi/g ash	0.0005	Y	0.0156	578
Plutonium-239/240	pCi/g ash	0.0005	N	0.0118	578
Strontium-90	pCi/g ash	1.200	Y	3.181	53750
Tritium	pCi/mL	0.5200	N	2.940	345000
Uranium-234	pCi/g ash	0.0159	Y	0.6393	625
Uranium-235/236	pCi/g ash	0.0027	Y	0.0320	625
Uranium-238	pCi/g ash	0.0109	Y	0.6544	694

<sup>a</sup>See Appendix B for an explanation of the presence of negative values.

<sup>b</sup>Regional Statistical Reference Level; this is the upper-limit background concentration (mean + 3 standard deviation) based on data from 2009 to 2018 (last 10 years) (n=24).

<sup>c</sup>Biota Dose Screening Level (BDSL), for terrestrial vegetation is based on 10% of 1 rad/day (DOE 2019).

#### References

DOE (Department of Energy). 2019. "A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota," U.S. Department of Energy report DOE-STD-1153-2019.

**Table S7-16. Total analyte list concentrations (mg/kg) in native understory vegetation collected on the upgradient side of the Pajarito Flood Retention Structure in 2019.**

Element <sup>a</sup>	Result mg/kg <sup>b</sup>	Detected	RSRL <sup>c</sup>
Aluminum	9.20	Y	634
Antimony	0.0290	Y	0.1988
Arsenic	0.0350	N	0.3582
Barium	25.0	Y	141
Beryllium	0.0610	N	0.1091
Cadmium	0.0310	N	0.4549
Calcium	2400	Y	22556
Chromium	0.3700	N	0.8120
Cobalt	0.0140	N	0.8051
Copper	5.50	Y	11.15
Iron	57.0	Y	767
Lead	<b>1.90</b>	Y	1.27
Magnesium	720	Y	5962
Manganese	46.0	Y	234
Mercury	0.00005	N	0.0174
Nickel	0.230	N	4.22
Potassium	10000	Y	66655
Selenium	0.3100	N	2.58
Silver	0.0230	Y	0.0265
Sodium	53.0	Y	7213
Thallium	0.0048	N	0.0914
Vanadium	0.0280	N	1.54
Zinc	20.0	Y	46.3

<sup>a</sup>Al, Ba, Be, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, V and Zn by method SW6010B and analyzed by ICP; Sb, As, Cd, Pb, Sb, Se, Ag and Th by method SW6020B and analyzed by ICPMS; Hg by method SW7471 and analyzed by cold vapor AA.

<sup>b</sup>Bold indicates a detectable concentrations that is above the RSRL.

<sup>c</sup>Regional Statistical Reference Level (RSRL); this is the upper-limit regional background concentration (mean + 3 standard deviation) based on data from 2009 through 2018 data (n=24).

**Table S7-17. Radionuclide concentrations in a composite whole body mouse sample (n=5) collected upgradient of the Pajarito Flood Retention Structure in 2019.**

Radionuclide	Units	Result <sup>a,b</sup>	Detected	RSRL <sup>c</sup>	BDSL <sup>d</sup>
Americium-241	pCi/g ash	0.0003	N	0.0116	40
Cesium-137	pCi/g ash	-0.3600	N	0.1456	5333
Plutonium-238	pCi/g ash	0.0011	Y	0.0060	42
Plutonium-239/240	pCi/g ash	0.0043	N	0.0128	42
Strontium-90	pCi/g ash	<b>0.6290</b>	Y	0.4324	3954
Tritium	pCi/mL	-0.0130	N	0.5310	34500
Uranium-234	pCi/g ash	0.0458	Y	0.0901	46
Uranium-235/236	pCi/g ash	0.0032	Y	0.0067	46
Uranium-238	pCi/g ash	0.0469	Y	0.0763	46

<sup>a</sup>See Appendix B for an explanation of the presence of negative values.

<sup>b</sup>Bold values are detectable activities that are higher than the Regional Statistical Reference Level.

<sup>c</sup>Regional Statistical Reference Level (RSRL); this is the upper-limit regional background concentration (mean + 3 standard deviation) based on 2007-2018 (n = 3).

<sup>d</sup>Biota Dose Screening Level is based on 10% of 0.1 rad/day (DOE 2019).

#### References

DOE (Department of Energy). 2019. “A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota,” U.S. Department of Energy report DOE-STD-1153-2019.

**Table S7-18. Total analyte list concentrations (mg/kg) in whole body mouse samples collected upgradient of the Pajarito Canyon Flood Retention Structure in 2019.**

Field Sample ID	Deer mouse (male)		Harvest mouse (male)		Harvest mouse (male)		<i>RSRL<sup>c</sup></i>	
	SFB-19-181444	Result <sup>b</sup>	Detected	Result	Detected	Result	Detected	
Aluminum	74.0	Y		21.0	Y	13.0	Y	110
Antimony	0.0650	Y		0.0280	N	0.0310	Y	0.3192
Arsenic	0.0400	N		0.0120	N	0.0077	N	0.0837
Barium	4.70	Y		3.10	Y	3.60	Y	13.6
Beryllium	0.0078	N		0.0048	N	0.0059	N	0.0372
Cadmium	0.0130	N		0.0098	N	0.0045	N	0.0424
Calcium	7900	Y		8800	Y	7900	Y	16734
Chromium	<b>0.8100</b>	Y		0.3100	N	0.2700	Y	0.5644
Cobalt	0.0570	Y		0.0330	Y	0.0210	Y	0.0760
Copper	2.30	Y		2.20	Y	2.50	Y	3.53
Iron	140	Y		89.0	Y	80.0	Y	206
Lead	0.3600	Y		0.2400	Y	0.1200	Y	5.61
Magnesium	290	Y		290	Y	310	Y	477
Manganese	5.70	Y		2.60	Y	4.60	Y	7.12
Mercury	0.0086	N		0.0034	N	0.0010	N	0.0149
Nickel	0.1100	Y		0.0710	Y	0.0670	Y	0.4998
Potassium	2800	Y		2900	Y	3000	Y	3936
Selenium	0.1700	Y		0.1800	Y	0.2300	Y	0.4570
Silver	0.0250	N		0.0057	N	0.0034	N	0.0140
Sodium	1500	Y		1200	Y	1200	Y	2064
Thallium	0.0028	N		0.0013	N	0.0009	N	0.0047
Vanadium	0.1400	N		0.0440	Y	0.0290	N	0.2754
Zinc	<b>270</b>	Y		160	Y	150	Y	178

<sup>a</sup>Al, Ba, Be, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, V and Zn by method SW6010B and analyzed by ICP; Sb, As, Cd, Pb, Sb, Se, Ag and Th by method SW6020B and analyzed by ICPMS; Hg by method SW7471 and analyzed by cold vapor AA.

<sup>b</sup>Bold indicates detectable concentrations that are above the Regional Statistical Reference Level.

<sup>c</sup>Regional Statistical Reference Level (RSRL); this is the upper-limit regional background concentration (mean + 3 standard deviation) based on 2007-2018 (n = 14).

**Table S7-19. Total polychlorinated biphenyl (PCB; mg/kg) in whole body mice collected upgradient of the Pajarito Flood Retention Structure in 2019.**

Field Sample ID	Brush mouse (female)	Brush mouse (male)	Deer mouse (male)		
	SFB-19-181447	SFB-19-181448	SFB-19-181449	Result <sup>a</sup>	RSRL <sup>b</sup>
Total PCB	0.0003	0.0012		<b>0.0185</b>	0.0129
					2.5

<sup>a</sup>Bold indicates detectable concentrations that are above the Regional Statistical Reference Level.

<sup>b</sup>Regional Statistical Reference Level (RSRL); this is the upper-limit regional background concentration (mean + 3 standard deviation) based on 2008-2018 (n = 16).

<sup>c</sup>Lowest Observable Adverse Effect Level (LOAEL); concentrations of PCBs in small mammal tissues associated with adverse effect (Batty et al. 1990)

#### References

Batty, J., R.A. Leavitt, N. Biondao, and D. Polin. 1990. "An Ecotoxicological Study of a Population of the White-Footed Mouse (*Peromyscus leucopus*) Inhabiting a Polychlorinated Biphenyls-Contaminated Area," *Archives of Environmental Contamination and Toxicology*, 19:283–290.

Table S7-20. Radionuclide concentrations in muscle and bone of deer from LANL and perimeter locations. Results from ashed samples are presented on the left, and results from one animal with dried but not ashed samples are presented on the right. Samples have unique identification numbers, even when they are from the same animal.

MUSCLE	Radionuclide	LANL								Perimeter								LANL							
		Deer		Deer		Deer		Deer		Deer		Deer		Deer		Deer		Deer		Deer		Deer			
		SFB-20-192589		SFB-192591		SFB-20-192597		SFB-20-192599		Pajarito and Diamond		LANSCE		SFB-20-192601		SFB-20-192605		Pueblo de San Ildefonso		Pueblo de San Ildefonso		Pueblo de San Ildefonso			
		West Road		West Road		8/1/2019		10/1/2019		12/12/2019		12/13/2019		12/1/2019		12/11/2019		Result		Detected		Result		Detected	
Americium-241	pCi/g ash	-0.0023	N	-0.0012	N	-0.0019	N	-0.0011	N	-0.0007	N	0.0006	N	0.0113	156	RSRL <sup>b</sup>	BDSL <sup>c</sup>	Radionuclide	Unit	SFB-19-183564	Deer	4/20/2019	LANL		
Cesium-137	pCi/g ash	-0.1100	N	0.1800	N	-0.1800	N	-0.1800	N	-0.0800	N	0.0800	N	1.1065	20622			Radionuclide	Unit	Truck Route	Deer				
Plutonium-238	pCi/g ash	0.0039	N	0.0019	N	0.0032	N	0.1390	N	0.0000	N	0.0027	N	0.0070	164			Radionuclide	Unit						
Plutonium-239/240	pCi/g ash	0.0039	N	0.0006	N	0.0032	N	0.0006	N	0.0021	N	0.0016	N	0.0056	164			Radionuclide	Unit						
Strontium-90	pCi/g ash	0.1100	Y	0.0130	N	0.0230	N	0.0012	N	0.0460	N	0.1870	Y	1.7841	15289			Radionuclide	Unit						
Tritium	pCi/mL	0.1640	N	0.0580	N	-0.0560	N	0.0250	N	-0.0310	N	0.0940	N	0.7193	34500			Radionuclide	Unit						
Uranium-234	pCi/g ash	0.0120	N	0.0145	N	0.0151	N	0.0009	N	0.0197	Y	0.0154	N	0.1164	178			Radionuclide	Unit						
Uranium-235/236	pCi/g ash	0.0018	N	-0.0011	N	0.0000	N	0.0031	N	0.0062	N	-0.0014	N	0.0116	178			Radionuclide	Unit						
Uranium-238	pCi/g ash	0.0068	N	0.0018	N	-0.0012	N	0.0023	N	0.0066	N	0.0049	Y	0.0521	197			Radionuclide	Unit						
<b>BONE</b>																									
<b>Radionuclide</b>																									
Americium-241	pCi/g ash	0.0003	N	-0.0009	N	0.0010	N	-0.0009	N	-0.0008	N	-0.0012	N	0.0046	5.68	RSRL <sup>b</sup>	BDSL <sup>c</sup>	Radionuclide	Unit	SFB-19-183567	Deer	4/20/2019	LANL		
Cesium-137	pCi/g ash	-0.0100	N	-0.4700	N	0.1600	N	0.1700	N	-0.3700	N	0.1400	N	0.2998	753			Radionuclide	Unit						
Plutonium-238	pCi/g ash	0.0018	N	0.0018	N	0.0043	Y	0.0018	N	0.0017	N	0.0006	N	0.0055	6.01			Radionuclide	Unit						
Plutonium-239/240	pCi/g ash	0.0009	N	0.0022	N	-0.0005	N	0.0018	N	0.0025	N	0.0006	N	0.0045	6.01			Radionuclide	Unit						
Strontium-90	pCi/g ash	0.3720	Y	0.2860	Y	0.2890	Y	0.4740	Y	0.2610	Y	0.3780	Y	4.8787	558			Radionuclide	Unit						
Tritium	pCi/mL	0.0630	N	0.0050	N	0.0340	N	-0.0360	N	0.0240	N	-0.0080	N	2.6934	34500			Radionuclide	Unit						
Uranium-234	pCi/g ash	0.0040	N	0.0042	N	0.0069	N	0.0075	N	0.0060	N	0.0007	N	0.0142	6.49			Radionuclide	Unit						
Uranium-235/236	pCi/g ash	0.0008	N	0.0006	N	0.0005	N	0.0000	N	0.0000	N	-0.0008	N	0.0025	6.49			Radionuclide	Unit						
Uranium-238	pCi/g ash	0.0013	N	0.0026	N	0.0005	N	0.0005	N	0.0000	N	0.0007	N	0.0076	7.21			Radionuclide	Unit						

<sup>a</sup>See Appendix B for an explanation of the presence of negative values.

<sup>b</sup>Regional Statistical Reference Level deer; this is the upper-limit background concentration (mean plus three standard deviation) based on regional background data from 1996 through 2016 (n=7).

<sup>c</sup>Biota Dose Screening Level is 10% of the DOE no effect level of 0.1 rad/d for animals (or 0.01 rad/d) (DOE 2019).

#### References

DOE (Department of Energy). 2019. "A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota," U.S. Department of Energy report DOE-STD-1153-2019.

Table S7-21. Radionuclide concentrations in muscle and bone of elk from LANL and perimeter locations. Results from ashed samples are presented on the left, and results from one animal with dried but not ashed samples are presented on the right. Samples have unique identification numbers, even when they are from the same animal.

MUSCLE	LANL		Perimeter		LANL		
	Elk		Elk		Elk		
	SFB-20-192593	SFB-20-192595	SFB-20-192603	Pueblo de San Ildefonso	SFB-19-183563		
	Truck Route	TA-39		Pajarito Road			
	10/7/2019	11/27/2019	12/2/2019		1/23/2019		
	Result	Detected	Result <sup>b</sup>	Detected	Result	Detected	
Americium-241	pCi/g ash	0.0001	N	-0.0006	N	0.0030	156
Cesium-137	pCi/g ash	-0.1300	N	0.0600	N	1.0148	20622
Plutonium-238	pCi/g ash	0.0015	N	0.0027	N	0.0032	164
Plutonium-239/240	pCi/g ash	-0.0015	N	0.0020	N	0.0079	164
Strontium-90	pCi/g ash	0.0340	N	0.0160	N	<b>0.1030</b>	Y
Tritium	pCi/mL	0.0960	N	-0.1210	N	-0.0300	N
Uranium-234	pCi/g ash	0.0075	N	0.0108	Y	0.0182	N
Uranium-235/236	pCi/g ash	-0.0011	N	0.0073	N	0.0008	N
Uranium-238	pCi/g ash	0.0103	Y	0.0070	N	0.0059	N
					0.0197	197	

  

BONE							
MUSCLE	Radionuclide	Unit	Result <sup>a</sup>	Detected	RSRL <sup>c</sup>	BDSL <sup>d</sup>	
		SFB-20-192594		SFB-20-192596		SFB-20-192604	
Americium-241	pCi/g ash	-0.0012	N	0.0001	N	-0.0019	N
Cesium-137	pCi/g ash	-0.1200	N	-0.1600	N	-0.3200	N
Plutonium-238	pCi/g ash	0.0017	N	0.0032	N	0.0009	N
Plutonium-239/240	pCi/g ash	0.0004	N	0.0028	N	0.0013	N
Strontium-90	pCi/g ash	0.3300	Y	0.3650	Y	0.5510	Y
Tritium	pCi/mL	0.2580	Y	0.0960	N	-0.0650	N
Uranium-234	pCi/g ash	0.0074	N	0.0056	N	0.0100	N
Uranium-235/236	pCi/g ash	0.0006	N	0.0011	N	0.0000	N
Uranium-238	pCi/g ash	0.0035	N	0.0037	N	0.0009	N
					0.0069	4.85	

<sup>a</sup>See Appendix B for an explanation of the presence of negative values.

<sup>b</sup>Bold indicates a radionuclide that was detected and was above the regional statistical reference level.

<sup>c</sup>Regional Statistical Reference Level elk; this is the upper-limit background concentration (mean plus three standard deviation) based on regional background data from 2017 through 2019 (n = 4).

<sup>d</sup>Biota Dose Screening Level is 10% of the DOE no effect level of 0.1 rad/d for animals (or 0.01 rad/d) (DOE 2019).

#### References

DOE (Department of Energy). 2019. "A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota," U.S. Department of Energy report DOE-STD-1153-2019.

**Table S7-22. Radionuclide activities in whole body samples of gopher snakes from LANL.**

		LANL							
Gopher Snake		Gopher Snake		Gopher Snake		Gopher Snake			
SFB-19-183575		SFB-19-183576		SFB-19-183577		SFB-19-183578			
Pajarito Road		TA-15		TA-39		WFO Area 1			
<b>WHOLE BODY</b>		<b>5/1/2019</b>		<b>5/17/2019</b>		<b>5/6/2019</b>		<b>6/24/2019</b>	
Radionuclide	Result <sup>a,b</sup>	Detected	Result	Detected	Result <sup>a</sup>	Detected	Result	Detected	Snake RSRL <sup>c</sup> Snake BDSL <sup>d</sup>
Americium-241	pCi/g ash	-0.0188	N	0.03380	N	0.0501	N	-0.0066	N      0.0389      34.1
Cesium-137	pCi/g ash	0.0126	N	-0.00032	N	0.0100	N	0.0478	N      0.0802      4,522
Plutonium-238	pCi/g ash	0.0071	N	0.00000	N	-0.0045	N	-0.0013	N      0.0109      36.1
Plutonium-239/240	pCi/g ash	0.0018	N	-0.00135	N	0.0090	N	-0.0052	N      0.0283      36.1
Strontium-90	pCi/g ash	0.1440	N	0.31900	Y	0.1830	N	0.1470	N      0.4046      3353
Tritium	pCi/mL	<b>8.210</b>	Y	0.22400	Y	<b>2.730</b>	Y	0.6750	Y      2.130      34500
Uranium-234	pCi/g ash	-0.0088	N	-0.00921	N	-0.0374	N	0.0120	N      0.0212      39.0
Uranium-235/236	pCi/g ash	0.0000	N	-0.00427	N	0.0000	N	0.0000	N      0.0099      39.0
Uranium-238	pCi/g ash	0.0117	N	0.00345	N	-0.0082	N	0.0071	N      0.0545      43.3

<sup>a</sup>See Appendix B for an explanation of the presence of negative values.

<sup>b</sup>Bold indicates a radionuclide that was detected and was above the regional statistical reference level.

<sup>c</sup>Regional Statistical Reference Level snake; this is the upper-limit background concentration (mean plus three standard deviation) based on regional background data from 2018 through 2019 (n=3).

<sup>d</sup>Biota Dose Screening Level is 10% of the DOE no effect level of 0.1 rad/d for animals (or 0.01 rad/d) (DOE 2019).

#### References

DOE (Department of Energy). 2019. "A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota," U.S. Department of Energy report DOE-STD-1153-2019.

**Table S7-23. Radionuclide activities in whole body birds and muscle and bone in a American badger from LANL. Samples have unique identification numbers, even when they are from the same animal.**

LANL									
WHOLE BODY	Radionuclide	American Kestrel		Great Horned Owl		Common Raven		Common Raven	
		SFB-19-183574	Mortandad Canyon	SFB-19-183571	Backgate	SFB-19-183572	Mortandad Canyon	SFB-19-183573	
		6/3/2019		4/8/2019		4/22/2019		4/22/2019	
		Result	Detected	Result	Detected	Result	Detected	Result	Detected
		Americium-241 pCi/g ash	-0.0070 N	0.0133 N		0.0145 N		-0.0180 N	
Cesium-137 pCi/g ash									
0.0935 N									
Plutonium-238 pCi/g ash									
-0.0052 N									
Plutonium-239/240 pCi/g ash									
-0.0091 N									
Strontium-90 pCi/g ash									
0.3170 N									
Tritium pCi/mL									
<b>4.470 Y</b>									
Uranium-234 pCi/g ash									
-0.0088 N									
Uranium-235/236 pCi/g ash									
0.0195 N									
Uranium-238 pCi/g ash									
0.0158 N									
RSRL <sup>c</sup> Bird BDSL <sup>d</sup>									
0.0020 36.8									
1.13 4874									
0.0074 38.9									
0.0122 38.9									
0.5037 3613									
0.4481 34500									
0.0927 42.0									
0.0045 42.0									
0.0328 46.6									
LANL									
American Badger									
SFB-19-183565									
Truck Route									
MUSCLE									
6/28/2019									
Radionuclide									
Unit									
Result									
Detected									
BDSL <sup>d</sup>									
Americium-241 pCi/g ash									
-0.0023 N									
87.5									
Cesium-137 pCi/g ash									
0.3500 N									
11600									
Plutonium-238 pCi/g ash									
0.0052 N									
92.5									
Plutonium-239/240 pCi/g ash									
0.0026 N									
92.5									
Strontium-90 pCi/g ash									
0.0160 N									
8600									
Tritium pCi/mL									
0.2200 N									
34500									
Uranium-234 pCi/g ash									
0.0138 N									
100									
Uranium-235/236 pCi/g ash									
0.0036 Y									
100									
Uranium-238 pCi/g ash									
0.0061 N									
111									
BONE									
SFB-19-183568									
Radionuclide									
Unit									
Result									
Detected									
BDSL <sup>d</sup>									
Americium-241 pCi/g ash									
-0.0015 N									
3.89									
Cesium-137 pCi/g ash									
-0.1800 N									
516									
Plutonium-238 pCi/g ash									
0.0027 N									
4.11									
Plutonium-239/240 pCi/g ash									
0.0031 N									
4.11									
Strontium-90 pCi/g ash									
0.6400 Y									
382									
Tritium pCi/mL									
0.2900 N									
34500									
Uranium-234 pCi/g ash									
0.0260 N									
4.44									
Uranium-235/236 pCi/g ash									
0.0038 Y									
4.44									
Uranium-238 pCi/g ash									
0.0165 Y									
4.93									

<sup>a</sup>See Appendix B for an explanation of the presence of negative values.

<sup>b</sup>Bold indicates detected values that were above the regional statistical reference level.

<sup>c</sup>Regional Statistical Reference Level for birds; this is the upper-limit background concentration (mean + 3 standard deviation) based on regional background data from 2017 through 2018 (n=2).

<sup>d</sup>Biota Dose Screening Level is 10% of the DOE no effect level of 0.1 rad/d for animals (or 0.01 rad/d) (DOE 2002). American badger specific BDSL were not available, therefore, racoon (similar mass) BDSL was used for comparisons.

#### References

DOE (Department of Energy). 2019. "A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota," U.S. Department of Energy report DOE-STD-1153-2019.

Table S7-24. Total analyte list concentrations in muscle of deer from LANL and perimeter locations.

MUSCLE	LANL										Perimeter						
	Deer		Deer		Deer		Deer		Deer		Deer		Deer		Deer		
	SFB-19-183564		SFB-20-192589		SFB-20-192591		SFB-20-192597		SFB-20-192599		SFB-20-192601		SFB-20-192605				
	Truck Route		West Road		West Road		Pajarito and Diamond		LANSCe		12/1/2019		12/13/2019		12/1/2019		
Element <sup>a</sup>	mg/kg <sup>b</sup>	Detected	mg/kg	Detected	mg/kg	Detected	mg/kg	Detected	mg/kg	Detected	mg/kg	Detected	mg/kg	Detected	mg/kg	Detected	RSRL <sup>c</sup>
Aluminum	6.65	N	1.90	Y	0.6800	Y	0.5300	N	0.5300	Y	0.6600	Y	4.30	Y	3.00		
Antimony	0.3230	N	<b>0.0270</b>	Y	<b>0.0200</b>	Y	<b>0.0290</b>	Y	<b>0.0460</b>	Y	<b>0.0190</b>	Y	<b>0.0260</b>	Y	0.0171		
Arsenic	0.3140	N	0.0046	N	0.0047	N	0.0047	N	0.0032	N	0.0046	N	0.0048	N	0.0063		
Barium	0.0978	N	<b>0.3500</b>	Y	<b>0.1600</b>	Y	0.0420	N	0.0310	Y	0.0510	Y	0.0600	Y	0.0952		
Beryllium	0.0186	N	0.0051	N	0.0053	N	0.0053	N	0.0036	N	0.0051	N	0.0054	N	0.0022		
Cadmium	0.0978	N	0.0021	N	0.0021	N	0.0021	N	0.0014	N	0.0021	N	<b>0.0062</b>	Y	0.0021		
Calcium	44.2	Y	<b>99.0</b>	Y	<b>84.0</b>	Y	36.0	Y	32.0	Y	56.0	Y	40.0	Y	63.5		
Chromium	0.1470	N	0.1600	Y	0.1400	Y	0.0560	Y	0.0720	Y	0.1000	Y	0.0690	Y	0.3588		
Cobalt	0.1470	N	0.0093	N	0.0097	N	0.0096	N	0.0065	N	0.0093	N	0.0098	N	0.0130		
Copper	1.21	Y	1.10	Y	1.50	Y	0.8600	Y	1.20	Y	1.70	Y	0.9400	Y	2.14		
Iron	25.6	Y	24.0	Y	17.0	Y	23.0	Y	29.0	Y	35.0	Y	27.0	Y	44.3		
Lead	0.3230	N	<b>0.1200</b>	Y	0.0120	Y	0.0063	N	0.0150	Y	0.0060	Y	<b>0.0330</b>	Y	0.0169		
Magnesium	205	Y	160	Y	170	Y	150	Y	170	Y	180	Y	140	Y	285		
Manganese	<b>0.2740</b>	Y	0.1100	Y	0.1900	Y	0.0890	Y	0.1100	Y	0.1200	Y	0.0930	Y	0.2044		
Mercury	0.0732	N	0.0021	N	0.0016	N	0.0021	N	0.0018	N	0.0027	N	0.0000	N	0.0028		
Nickel	0.0929	N	<b>0.1400</b>	Y	<b>0.0950</b>	Y	0.0400	N	0.0270	N	0.0390	N	0.0410	N	0.0312		
Potassium	3230	Y	2200	Y	2300	Y	2300	Y	3000	Y	3400	Y	2000	Y	3701		
Selenium	0.3350	N	0.0960	Y	0.0760	Y	0.1100	Y	0.1300	Y	0.1100	Y	0.1100	Y	1.37		
Silver	0.0978	N	<b>0.0066</b>	Y	0.0008	N	0.0008	N	0.0005	N	0.0008	N	0.0008	N	0.0012		
Sodium	513	Y	530	Y	530	Y	580	Y	510	Y	670	Y	540	Y	865		
Thallium	0.1300	N	0.0002	N	0.00024	N	0.0002	N	0.0002	N	0.0002	N	0.0002	N	0.0040		
Vanadium	0.0978	N	0.0093	N	0.00970	N	0.0096	N	0.0091	Y	0.0093	N	0.0098	N	0.0152		
Zinc	38.7	Y	59.0	Y	38.0	Y	49.0	Y	54.0	Y	50.0	Y	52.0	Y	88.1		

<sup>a</sup>Al, Ba, Be, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, V and Zn by method SW6010B and analyzed by ICP; Sb, As, Cd, Pb, Sb, Se, Ag and Th by method SW6020B and analyzed by ICPMS; Hg by method SW7471 and analyzed by cold vapor AA.

<sup>b</sup>Bold values are detectable concentrations that are higher than the Regional Statistical Reference Level.

<sup>c</sup>Regional Statistical Reference Level for deer; this is the upper-limit background concentration (mean plus three standard deviation) based on regional background data from 2010 through 2016 (n=4).

**Table S7-25. Total analyte list concentrations in muscle elk from LANL, perimeter locations.**

MUSCLE	LANL				Perimeter		
	Elk		Elk		Elk		Elk
	SFB-19-183563	Pajarito Road	SFB-20-192593	Truck Route	SFB-20-192595	TA-39	SFB-20-192603
	1/20/2019		10/7/2019		11/27/2019		12/2/2019
Element <sup>a</sup>	mg/kg	Detected	mg/kg <sup>b</sup>	Detected	mg/kg	Detected	RSRL <sup>c</sup>
Aluminum	6.28	N	0.4900	Y	0.5300	N	0.7800
Antimony	0.3050	N	0.0210	Y	0.0300	Y	0.0220
Arsenic	0.3140	N	0.0041	N	0.0047	N	0.0047
Barium	0.0924	N	0.0370	N	0.0660	Y	0.2200
Beryllium	0.0186	N	0.0046	N	0.0053	N	0.0053
Cadmium	0.0924	N	0.0018	N	0.0032	Y	0.0036
Calcium	39.5	Y	30.0	Y	53.0	Y	140
Chromium	0.1390	N	0.0590	Y	0.0610	Y	0.0850
Cobalt	0.1390	N	0.0083	N	0.0096	N	0.0096
Copper	1.03	Y	0.8700	Y	0.6600	Y	1.10
Iron	35.7	Y	25.0	Y	33.0	Y	35.0
Lead	0.3050	N	0.0055	N	0.0063	N	0.0063
Magnesium	190	Y	170	Y	170	Y	170
Manganese	0.1850	N	<b>0.0920</b>	Y	0.0370	Y	0.0890
Mercury	0.0770	N	0.0014	N	0.0032	N	0.0022
Nickel	0.0928	N	0.0350	N	0.0400	N	0.0400
Potassium	3090	Y	3100	Y	1700	Y	3100
Selenium	0.3340	N	0.0940	Y	0.0600	Y	0.0760
Silver	0.0924	N	0.0140	Y	0.0008	N	0.0008
Sodium	440	Y	430	Y	760	Y	670
Thallium	0.1300	N	0.0003	Y	0.0002	N	0.0002
Vanadium	0.0924	N	0.0083	N	0.0096	N	0.0096
Zinc	52.8	Y	37.0	Y	48.0	Y	58.0

<sup>a</sup>Al, Ba, Be, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, V and Zn by method SW6010B and analyzed by ICP; Sb, As, Cd, Pb, Sb, Se, Ag and Th by method SW6020B and analyzed by ICPMS; Hg by method SW7471 and analyzed by cold vapor AA.

<sup>b</sup>Bold values are detectable concentrations that are higher than the Regional Statistical Reference Level.

<sup>c</sup>Regional Statistical Reference Level for elk; this is the upper-limit background concentration (mean + 3 standard deviation) based on regional background data from 2017 through 2019 (n = 4).

**Table S7-26. Total analyte list concentrations in whole body gopher snakes from LANL.**

WHOLE BODY	LANL								
	Gopher Snake		Gopher Snake		Gopher Snake		Gopher Snake		
	SFB-19-183575		SFB-19-183576		SFB-19-183577		SFB-19-183578		
	Pajarito Road		TA-15		TA-39		WFO Area 1		
	5/1/2019		5/17/2019		5/6/2019		6/24/2019		
Element <sup>a</sup>	mg/kg	Detected	mg/kg <sup>b</sup>	Detected	mg/kg	Detected	mg/kg	Detected	RSRL <sup>c</sup>
Aluminum	6.22	N	<b>15.2</b>	Y	6.54	N	<b>39.5</b>	Y	12.2
Antimony	0.3020	N	0.3080	N	0.3170	N	0.3080	N	0.6376
Arsenic	0.0329	N	0.3130	N	0.3110	N	0.3330	N	0.7106
Barium	2.65	Y	1.76	Y	0.6610	Y	4.21	Y	28.0
Beryllium	0.0195	N	0.0185	N	0.0184	N	0.0197	N	0.0365
Cadmium	0.0914	N	0.0933	N	0.0962	N	0.0933	N	0.1933
Calcium	2520	Y	4310	Y	240	Y	5760	Y	94334
Chromium	0.1370	N	0.1650	Y	0.1440	N	0.3000	Y	1.26
Cobalt	0.1370	N	0.1400	N	0.1440	N	0.1400	N	0.2423
Copper	0.7720	Y	0.6410	Y	1.43	Y	1.46	Y	2.45
Iron	44.3	Y	48.3	Y	<b>112</b>	Y	<b>90.0</b>	Y	68.9
Lead	0.3020	N	0.3080	N	0.3170	N	0.3080	N	3.37
Magnesium	164	Y	192	Y	165	Y	247	Y	894
Manganese	1.17	Y	1.43	Y	0.9370	Y	2.84	Y	20.0
Mercury	0.0702	N	0.0696	N	0.0676	N	0.0718	N	0.1884
Nickel	0.0973	N	0.0926	N	0.0921	N	0.0986	N	0.1950
Potassium	2070	Y	2200	Y	2240	Y	2700	Y	10416
Selenium	0.3500	N	0.3330	N	0.3310	N	0.3550	N	0.8603
Silver	0.0914	N	0.0933	N	0.0962	N	0.0933	N	1.94
Sodium	1270	Y	1310	Y	1350	Y	1650	Y	8974
Thallium	0.1360	N	0.130	N	0.1290	N	0.1380	N	0.3079
Vanadium	0.0914	N	0.093	N	0.0962	N	0.1190	Y	0.1306
Zinc	35.8	Y	30.6	Y	23.4	Y	42.1	Y	220

<sup>a</sup>Al, Ba, Be, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, V and Zn by method SW6010B and analyzed by ICP; Sb, As, Cd, Pb, Se, Ag and Th by method SW6020B and analyzed by ICPMS; Hg by method SW7471 and analyzed by cold vapor AA.

<sup>b</sup>Bold indicates an element that was detected and was above the regional statistical reference level.

<sup>c</sup>Regional Statistical Reference Level snake; this is the upper-limit background concentration (mean plus three standard deviation) based on regional background data from 2018 through 2019 (n=3).

**Table S7-27. Total analyte list concentrations in muscle of birds at LANL**

MUSCLE	LANL							
	American Kestrel		Great Horned Owl		Common Raven		Common Raven	
	SFB-19-183574		SFB-19-183571		SFB-19-183572		SFB-19-183573	
	Mortandad Canyon		Backgate		Mortandad Canyon		Mortandad Canyon	
Element <sup>a</sup>	6/3/2019		4/8/2019		4/22/2019		4/22/2019	
	mg/kg	Detected	mg/kg <sup>b</sup>	Detected	mg/kg	Detected	mg/kg	Detected
Aluminum	41.7	Y	97.8	Y	115	Y	51.7	Y
Antimony	0.3070	N	0.3080	N	0.3020	N	0.3250	N
Arsenic	0.3220	N	0.3330	N	0.3340	N	0.3220	N
Barium	3.12	Y	11.7	Y	4.13	Y	1.57	Y
Beryllium	0.0190	N	0.0197	N	0.0198	N	0.0190	N
Cadmium	0.0929	N	0.0933	N	0.0916	N	0.0986	N
Calcium	7970	Y	94300	Y	5600	Y	979	Y
Chromium	0.2730	Y	1.30	Y	0.2750	Y	0.1740	Y
Cobalt	0.1390	N	0.1400	N	0.1370	N	0.1480	N
Copper	3.35	Y	4.03	Y	4.98	Y	3.83	Y
Iron	96.4	Y	137	Y	176	Y	108	Y
Lead	0.3070	N	1.54	N	0.4390	Y	0.3250	N
Magnesium	243	Y	1150	Y	258	Y	263	Y
Manganese	2.90	Y	8.16	Y	6.37	Y	2.33	Y
Mercury	0.0804	N	0.2370	Y	0.0799	N	0.0747	N
Nickel	0.0952	N	0.0986	N	0.1210	Y	0.0952	N
Potassium	1870	Y	4120	Y	2190	Y	3100	Y
Selenium	0.5140	Y	0.4930	Y	0.3690	Y	0.3430	N
Silver	0.0929	N	0.4660	N	0.1440	Y	0.0986	N
Sodium	941	Y	4510	Y	1010	Y	885	Y
Thallium	0.1330	N	0.1380	N	0.1380	N	0.1330	N
Vanadium	0.1010	Y	0.2360	Y	0.2260	Y	0.1540	Y
Zinc	40.6	Y	122	Y	61.0	Y	29.2	Y
								168

<sup>a</sup>Al, Ba, Be, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, V and Zn by method SW6010B and analyzed by ICP; Sb, As, Cd, Pb, Se, Ag and Th by method SW6020B and analyzed by ICPMS; Hg by method SW7471 and analyzed by cold vapor AA.

<sup>b</sup>Bold indicates total PCBs were above the regional statistical reference level.

<sup>c</sup>Regional Statistical Reference Level for birds; this is the upper-limit background concentration (mean + 3 standard deviation) based on regional background data from 2017 through 2018 (n=2).

**Table S7-28. Polychlorinated biphenyl concentrations in muscle of deer collected from LANL and perimeter locations.**

LANL										Perimeter						
Deer		Deer		Deer		Deer		Deer		Deer		Deer		Deer		
SFB-19-183564		SFB-20-192589		SFB-20-192591		SFB-20-192597		SFB-20-192599		SFB-20-192601		SFB-20-192605				
Truck Route		West Road		West Road		Pajarito and Diamond		LANSCE		Pueblo de San Ildefonso		Pueblo de San Ildefonso				
4/2/2019		8/1/2019		10/1/2019		12/12/2019		12/13/2019		12/1/2019		12/11/2019				
mg/kg <sup>a</sup>		Detected		mg/kg		Detected		mg/kg		Detected		mg/kg		Detected		
Total PCB	<b>0.000535</b>	Y	<b>0.000158</b>	Y	<b>0.000044</b>	Y	0.000016	Y	<b>0.000734</b>	Y	<b>0.000023</b>	Y	<b>0.000023</b>	Y	RSRL <sup>b</sup>	FDA <sup>c</sup>

<sup>a</sup>Bold indicates total PCBs were above the regional statistical reference level.

<sup>b</sup>Regional Statistical Reference Level for deer; this is the upper-limit background concentration (mean + 3 standard deviation) based on regional background data from 2010 through 2016 (n=4).

<sup>c</sup>Food and Drug Administration red meat consumption standard for PCBs (FDA 1987)

#### References

FDA (U.S. Food and Drug Administration). 1987. "CPG Sec. 565.200 Red Meat Adulterated with PCBs," <https://www.fda.gov/ICECI/ComplianceManuals/CompliancePolicyGuidanceManual/ucm074589.htm>, accessed May 2020.

**Table S7-29.** Total polychlorinated biphenyl concentrations in muscle of elk collected from LANL and

LANL				Perimeter				
Elk		Elk		Elk		Elk		
SFB-19-183563		SFB-20-192593		SFB-20-192595		SFB-20-192603		
Pajarito Road		Truck Route		TA-39		Pueblo de San Ildefonso		
1/23/2019		10/7/2019		11/27/2019		12/2/2019		
mg/kg <sup>a</sup>	Detected	mg/kg	Detected	mg/kg	Detected	mg/kg	Detected	
Total PCB	0.000182	Y	0.000480	Y	0.000211	Y	0.000007	Y
RSRL <sup>b</sup>				FDA <sup>c</sup>				

<sup>a</sup>Bold indicates total PCBs that were detected and were above the regional statistical reference level.

<sup>b</sup>Regional Statistical Reference Level for elk; this is the upper-limit background concentration (mean + 3 standard deviation) based on regional background data from 2017 through 2019 (n = 4).

<sup>c</sup>Food and Drug Administration red meat consumption standard for PCBs (FDA 1987)

## References

FDA (U.S. Food and Drug Administration). 1987. "CPG Sec. 565.200 Red Meat Adulterated with PCBs," <https://www.fda.gov/ICECI/ComplianceManuals/CompliancePolicyGuidanceManual/ucm074589.htm>, accessed May 2020.

**Table S7-30. Total polychlorinated biphenyl concentrations in gopher snakes from LANL.**

LANL							
Gopher Snake		Gopher Snake		Gopher Snake		Gopher Snake	
SFB-19-183575		SFB-19-183576		SFB-19-183577		SFB-19-183578	
Pajarito Road		TA-15		TA-39		WFO Area 1	
5/1/2019		5/1/2019		5/6/2019		6/24/2019	
mg/kg <sup>a</sup>	Detected	mg/kg	Detected	mg/kg	Detected	mg/kg	Detected
<b>0.00271</b>	Y	<b>0.00104</b>	Y	<b>0.000793</b>	Y	<b>0.00218</b>	Y
RSRL <sup>b</sup>							
0.0004740							

<sup>a</sup>Bold indicates PCBs that were detected and above the regional statistical reference level.

<sup>b</sup>Regional Statistical Reference Level snake; this is the upper-limit background concentration (mean plus three standard deviation) based on regional background data from 2018 through 2019 (n=3).

Table S7-31. Total polychlorinated biphenyl concentrations in birds and of an American Badger from LANL.

LANL						LANL	
American Kestrel		Great Horned Owl		Common Raven		Common Raven	
SFB-19-183574		SFB-19-183571		SFB-19-183572		SFB-19-183573	
Mortandad Canyon		Backgate		Mortandad Canyon		Mortandad Canyon	
6/3/2019		4/8/2019		4/22/2019		4/22/2019	
mg/kg	Detected	mg/kg <sup>a</sup>	Detected	mg/kg	Detected	mg/kg	Detected
Total PCB	Y	<b>0.6420</b>	Y	0.0364	Y	0.0516	Y
						Bird RSRL <sup>b</sup>	0.1001
						mg/kg	Detected
						0.0110	Y

<sup>a</sup>Bold indicates total PCBs were above the regional statistical reference level.

<sup>b</sup>Regional Statistical Reference Level for birds; this is the upper-limit background concentration (mean + 3 standard deviation) based on regional background data from 2017 through 2018 (n=2).

**Table S7-32. Per- and polyfluoroalkyl substance concentrations in muscle of deer samples at LANL and an elk sample from background.**

Chemical	Abbreviation	LANL				Background	
		Deer		Deer		Deer	
		SFB-20-192589	SFB-20-192597	Pajarito and Diamond	SFB-20-192599	LANSCE	Elk
		West Road					SFB-20-192607
8/1/2019		12/12/2019		12/13/2019		12/9/2019	
		ng/g	Detected	ng/g	Detected	ng/g	Detected
ethyl perfluorooctanesulfonamidoacetic acid[N-]	N-EtFOSAA	0.5260	N	0.4800	N	0.4510	N
methyl perfluorooctanesulfonamidoacetic acid[N-]	N-Me-FOSAA	0.6320	N	0.5760	N	0.5410	N
Perfluorobutanesulfonic acid	PFBS	0.3160	N	0.2880	N	0.2700	N
Perfluorodecanoic acid	PFDA	0.7080	N	0.6460	N	0.6070	N
Perfluorododecanoic acid	PFDoDA	0.3160	N	0.2880	N	0.2700	N
Perfluoroheptanoic acid	PFHpA	0.3160	N	0.2880	N	0.2700	N
Perfluorohexanesulfonic acid	PFHxS	0.3160	N	0.2880	N	0.2700	N
Perfluorohexanoic acid	PFHxA	0.3830	N	0.4000	Y	0.3280	N
Perfluorononanoic acid	PFNA	0.3160	N	0.2880	N	0.2700	N
Perfluorooctanesulfonic acid	PFOS	0.3830	N	0.3490	N	0.3280	N
Perfluorooctanoic acid	PFOA	0.3830	N	0.3490	N	0.3280	N
Perfluorotetradecanoic acid	PFTeDa	0.3830	N	0.3490	N	0.3280	N
Perfluorotridecanoic acid	PFTrDA	0.3160	N	0.2880	N	0.2700	N
Perfluoroundecanoic acid	PFUnDA	0.3160	N	0.2880	N	0.2700	N

**Table S7-33. Per- and polyfluoroalkyl substance concentrations in whole body gopher snake samples at LANL.**

Chemical	Abbreviation	LANL								RSRL <sup>b</sup>	
		Gopher Snake		Gopher Snake		Gopher Snake		Gopher Snake			
		SFB-19-183575	SFB-19-183576	TA-15	TA-39	SFB-19-183577	WFO Area 1	SFB-19-183578	6/24/2019		
		Pajarito Road									
		5/1/2019		5/17/2019		5/6/2019					
ethyl perfluoroctanesulfonamidoacetic acid[N-]	N-EtFOSAA	0.000	N	0.0000	N	0.0000	N	0.0000	N	0.0000	
methyl perfluoroctanesulfonamidoacetic acid[N-]	N-Me-FOSAA	0.000	N	0.0000	N	0.0000	N	0.0000	N	0.0000	
Perfluorobutanesulfonic acid	PFBS	0.000	N	0.0000	N	0.0000	N	0.0000	N	0.0000	
Perfluorodecanoic acid	PFDA	0.188	N	0.0000	N	0.0000	N	0.0000	N	0.0000	
Perfluorododecanoic acid	PFDoDA	0.000	N	0.0000	N	0.0000	N	0.0000	N	0.0000	
Perfluoroheptanoic acid	PFHpA	0.000	N	0.0000	N	0.0000	N	0.0000	N	0.0000	
Perfluorohexanesulfonic acid	PFHxS	0.057	N	0.0000	N	0.0000	N	0.0000	N	0.0000	
Perfluorohexanoic acid	PFHxA	0.000	N	0.0000	N	0.0000	N	0.0000	N	0.0000	
Perfluorononanoic acid	PFNA	0.000	N	0.0000	N	0.0000	N	0.0000	N	0.0000	
Perfluorooctanesulfonic acid	PFOS	<b>1.65</b>	Y	0.0000	N	0.0000	N	<b>1.97</b>	Y	1.23	
Perfluorooctanoic acid	PFOA	0.000	N	0.0000	N	0.0000	N	0.0000	N	0.0000	
Perfluorotetradecanoic acid	PFTeDa	0.976	Y	0.0000	N	0.0000	N	0.0000	N	0.0000	
Perfluorotridecanoic acid	PFTrDA	0.000	N	0.0000	N	0.0000	N	0.0000	N	0.0000	
Perfluoroundecanoic acid	PFUnDA	0.000	N	0.0000	N	0.0000	N	0.0000	N	0.0000	

<sup>a</sup>Bold indicates total PCBs were above the regional statistical reference level.

<sup>b</sup>Regional Statistical Reference Level for snake; this is the upper-limit background concentration (mean + 3 standard deviation) based on regional background data from 2019 (n=2).

**Table S7-34. Per- and polyfluoroalkyl substance concentrations in whole body bird samples at LANL.**

Chemical	Abbreviation	LANL							
		American Kestral		Great Horned Owl		Common Raven		Common Raven	
		SFB-19-183574	SFB-19-183571	Mortandad Canyon	Backgate	SFB-19-183572	Mortandad Canyon	SFB-19-183573	Mortandad Canyon
		6/3/2019	4/8/2019		4/22/2019		4/22/2019		4/22/2019
		ng/g	Detected	ng/g	Detected	ng/g	Detected	ng/g	Detected
ethyl perfluorooctanesulfonamidoacetic acid[N-]	N-EtFOSAA	0.0000	N	0.0000	N	0.0000	N	0.0000	N
methyl perfluorooctanesulfonamidoacetic acid[N-]	N-Me-FOSAA	0.0000	N	0.0000	N	0.0000	N	0.0000	N
Perfluorobutanesulfonic acid	PFBS	0.0000	N	0.0000	N	0.0000	N	0.0000	N
Perfluorodecanoic acid	PFDA	0.0000	N	0.0000	N	0.2410	N	0.2440	N
Perfluorododecanoic acid	PFDODA	0.0000	N	0.5570	Y	1.67	Y	0.2440	N
Perfluoroheptanoic acid	PFHpA	0.0000	N	0.0000	N	0.0000	N	0.0000	N
Perfluorohexanesulfonic acid	PFHxS	0.5470	Y	0.0000	N	3.35	Y	0.0000	N
Perfluorohexanoic acid	PFHxA	0.0000	N	0.0000	N	0.0000	N	0.0000	N
Perfluorononanoic acid	PFNA	0.3670	Y	0.0000	N	0.3420	Y	0.6840	Y
Perfluorooctanesulfonic acid	PFOS	4.15	Y	1.97	Y	6.43	Y	2.63	Y
Perfluoroctanoic acid	PFOA	0.3670	Y	0.0000	N	0.9380	Y	0.0000	N
Perfluorotetradecanoic acid	PFTeDa	0.0000	N	0.7620	Y	4.11	Y	0.0000	N
Perfluorotridecanoic acid	PFTrDA	0.0000	N	1.22	Y	33.0	Y	0.0000	N
Perfluoroundecanoic acid	PFUnDA	0.2090	N	0.5210	Y	6.32	Y	0.2730	Y

**Table S8-1. Radionuclide concentrations (pCi/g) in crops collected from LANL and the surrounding areas in 2019.**

		Tritium		Americium-241		Cesium-137		Plutonium-238		Plutonium-239/240		Strontium-90		Uranium-234		Uranium-235/236		Uranium-238	
LANL	Location ID	pCi/mL	Detected	pCi/g	Detected	pCi/g	Detected	pCi/g	Detected	pCi/g	Detected	pCi/g <sup>a</sup>	Detected	pCi/g	Detected	pCi/g	Detected	pCi/g	Detected
Lambsquarter	FS-LANL-1901	0.0330	N	-0.0018	N	0.1900	N	0.0047	N	0.0041	Y	<b>0.9300</b>	Y	0.0080	Y	0.0010	N	0.0071	Y
Apricots	FS-LANL-1902	-0.0330	N	-0.0036	N	0.0900	N	0.0017	N	0.0026	N	0.0450	N	0.0078	Y	0.0007	N	0.0050	Y
Apricots	FS-LANL-1903	0.0680	N	-0.0009	N	0.0200	N	0.0000	N	0.0025	N	0.0510	Y	0.0055	Y	0.0018	N	0.0040	Y
Chokecherry	FS-LANL-1904	0.0760	N	-0.0015	N	-0.1400	N	0.0054	Y	0.0045	Y	<b>1.97</b>	Y	0.0349	Y	0.0028	Y	0.0172	Y
Prickly Pear	FS-LANL-1905	0.4100	Y	-0.0006	N	0.0400	N	0.0059	N	0.0040	N	<b>2.39</b>	Y	0.0572	Y	0.0022	N	0.0548	Y
Crabapple	FS-LANL-1906	0.0770	N	-0.0023	N	0.0600	N	0.0019	N	0.0025	N	0.0510	Y	0.0117	N	0.0004	N	0.0087	Y
Peaches	FS-LANL-1907	0.0860	N	-0.0018	N	0.1500	N	0.0041	N	0.0031	Y	0.1040	Y	0.0116	N	0.0016	Y	0.0147	Y
<b>Los Alamos</b>																			
Cherries - pie	FS-LA-1901	-0.0540	Y	-0.0003	N	-0.1400	N	0.0013	N	0.0021	N	0.2460	Y	0.0460	Y	0.0011	N	0.0324	Y
Cherries - bush	FS-LA-1902	-0.0340	N	-0.0029	N	-0.1300	N	0.0010	N	0.0000	N	0.0720	Y	0.0086	Y	0.0000	N	0.0030	N
Cherries - bing	FS-LA-1904	0.0370	N	0.0002	N	-0.3000	N	0.0043	Y	0.0021	N	0.0340	N	0.0060	Y	0.0000	N	0.0004	N
Apricots	FS-LA-1905	-0.0810	N	-0.0009	N	-0.5200	N	0.0028	N	0.0032	Y	0.0850	Y	0.0096	Y	-0.0010	N	0.0039	N
Apricots	FS-LA-1906	0.1060	N	-0.0015	N	-0.2200	N	0.0039	N	0.0024	N	0.0420	N	0.0005	N	0.0011	N	0.0028	N
Lambsquarter	FS-LA-1907	0.0890	N	-0.0006	N	0.1700	N	0.0015	N	0.0038	N	0.4740	Y	0.0130	Y	0.0025	Y	0.0078	Y
<b>White Rock</b>																			
Cherry Plums	FS-WR-1901	0.1320	N	-0.0033	N	-0.2600	N	0.0015	N	0.0025	Y	0.0930	Y	0.0128	Y	0.0025	Y	0.0081	Y
Apricots	FS-WR-1902	-0.0270	N	-0.0040	N	0.2100	N	0.0023	N	0.0027	N	-0.0010	N	0.0063	Y	0.0027	Y	0.0045	Y
Onions	FS-WR-1903	-0.0690	N	-0.0015	N	-0.2000	N	0.0015	N	0.0053	Y	0.1560	Y	0.0805	Y	0.0038	Y	0.0658	Y
Cherries - pie	FS-WR-1904	0.0100	N	-0.0036	N	-0.1600	N	0.0044	Y	0.0048	Y	0.0150	N	0.0128	Y	-0.0015	N	0.0094	Y
Cherries - bing	FS-WR-1905	0.0450	N	-0.0036	N	0.1300	N	0.0024	N	0.0024	N	0.3000	Y	0.0162	Y	0.0005	N	0.0075	Y
Cherries - bing	FS-WR-1908	-0.0460	N	-0.0017	N	-0.4000	N	0.0041	N	0.0027	Y	0.0420	N	0.0083	N	0.0024	Y	0.0012	N
<b>Pueblo de San Ildefonso</b>																			
Pears	FS-PSI-1901	-0.0920	N	-0.0040	N	-0.6200	N	0.0014	N	0.0000	N	0.0680	Y	0.0196	Y	0.0011	N	0.0130	Y
Peaches	FS-PSI-1902	-0.0440	N	0.0000	N	0.5400	N	0.0046	Y	0.0041	N	0.0300	N	0.0414	Y	0.0014	N	<b>0.4530</b>	Y
Apples	FS-PSI-1903	-0.0170	N	-0.0027	N	-0.1700	N	0.0012	N	0.0035	N	0.0160	N	0.0133	Y	0.0018	N	0.0074	Y
Pumpkin	FS-PSI-1904	-0.1040	N	-0.0020	N	-0.1700	N	0.0045	Y	0.0050	Y	0.2030	Y	0.1100	Y	0.0055	Y	0.0797	Y
Watermelon	FS-PSI-1905	0.1860	Y	-0.0025	N	-0.3200	N	0.0048	N	0.0007	N	0.3910	Y	0.0244	Y	0.0029	N	0.0136	Y
Green Chile	FS-PSI-1906	0.0860	N	0.0002	N	0.1600	N	0.0062	N	0.0086	N	0.1490	Y	0.0481	Y	0.0051	Y	0.0349	Y
Squash- orange summer	FS-PSI-1907	0.0680	N	-0.0017	N	-0.3600	N	0.0000	N	0.0056	Y	0.0330	N	0.0880	Y	0.0049	N	0.0689	Y
Corn	FS-PSI-1908	0.0410	N	-0.0041	N	1.1900	N	0.0064	N	0.0028	Y	0.0850	N	0.0189	Y	0.0008	N	0.0149	Y
Pigweed	FS-PSI-1909	0.0500	N	-0.0031	N	-0.1000	N	0.0018	N	0.0042	N	0.1300	Y	0.1160	Y	0.0056	Y	0.0782	Y
Prickly Pear	FS-PSI-1910	-0.0350	N	-0.0031	N	-0.0500	N	0.0045	Y	0.0030	N	<b>1.68</b>	Y	0.0072	N	0.0015	Y	0.0081	Y
Plums	FS-PSI-1913	-0.1600	N	0.0008	N	-0.3800	N	0.0011	N	0.0016	N	0.0790	Y	0.0637	Y	0.0044	Y	0.0473	Y
Pears	FS-PSI-1914	0.0600	N	-0.0012	N	-0.2800	N	0.0010	N	0.0019	N	0.0210	N	0.0304	Y	0.0010	N	0.0132	Y
Apples	FS-PSA-1915	0.0000	N	0.0000	N	0.1300	N	0.0029	Y	0.0014	N	0.1050	Y	0.0169	Y	0.0015	N	0.0128	Y
<b>Pueblo de Cochiti</b>																			
Peaches	FS-CP-1901	0.2900	N	0.0008	N	-0.2800	N	0.0000	N	0.0035	N	0.0160	N	0.0337	Y	0.0030	N	0.0376	Y
Squash	FS-CP-1902	-0.0500	N	0.0014	N	0.5200	N	-0.0010	N	0.0010	N	0.1630	Y	0.0627	Y	0.0031	N	0.0462	Y
Corn	FS-CP-1903	0.0700	N	-0.0007	N	0.2500	N	0.0009	N	0.0009	N	0.0380	N	0.0101	Y	0.0020	N	0.0028	N
Corn	FS-CP-1904	-0.1800	N	-0.0012	N	-0.0600	N	0.0005	N	0.0015	N	-0.0190	N	0.0011	N	-0.0019	N	0.0044	Y
Apples - Green	FS-CP-1905	0.0100	N	0.0000	N	0.0000	N	0.0032	N	0.0048	N	-0.0010	N	0.0218	Y	0.0015	N	0.0168	Y
Apples - Red	FS-CP-1906	0.1900	N	-0.0020	N	0.0500	N	0.0012	N	0.0016	N	-0.0090	N	0.0076	Y	0.0010	N	0.0042	Y
<b>Screening Levels</b>																			
RSRL <sup>b</sup>		2.989		0.0067		0.7014		0.0085		0.0075		0.6481		0.2614		0.0112		0.2052	

<sup>a</sup>Bold value indicates a sample result which was detected and is higher than the RSRL.

<sup>b</sup>Regional Statistical Reference Level; this is the upper-limit background concentration (mean + 3 standard deviation) for crops based on data from 2010 to 2019 (n=21).

**Table S8-2. Radionuclide concentrations (pCi/L) in goat milk and (pCi/g) in chicken and goose eggs collected from perimeter locations in 2019.**

Radionuclide	Unit	Goat Milk		RSRL <sup>a</sup>	Unit	Goose Eggs		Perimeter	Chicken Eggs		RSRL <sup>b</sup>	Chicken Eggs			
		Result	Detected			FS-SWR-1906	FS-WR-1907		FS-BKGD-1906	FS-PSI-1911		Pueblo De San Ildefonso			
		FS-LA-1908	Los Alamos			White Rock	White Rock		El Rito	Pueblo De San Ildefonso		Perimeter			
Perimeter	Perimeter	Background	Background	Background	Background	Background	Background	Background	Background	Background	Background	Background	Background		
Americium-241	pCi/L	-0.0090	N	0.1330	pCi/g wet	0.0050	N	0.0175	N	0.0041	N	pCi/g ash	0.0002	N	0.01963
Cesium-137	pCi/L	-1.700	N	1.076	pCi/g wet	-0.0039	N	0.0035	N	0.0016	N	pCi/g ash	-0.3600	N	0.29155
Plutonium-238	pCi/L	0.0190	N	0.0939	pCi/g wet	-0.0028	N	-0.0146	N	0.0094	N	pCi/g ash	0.0118	N	0.00361
Plutonium-239/240	pCi/L	0.0190	N	0.1119	pCi/g wet	-0.0028	N	-0.0049	N	-0.0019	N	pCi/g ash	0.0039	N	0.01932
Strontium-90	pCi/L	0.3400	N	5.741	pCi/g wet	-0.0737	N	0.0302	N	-0.0284	N	pCi/g ash	0.0120	N	0.66256
Tritium	pCi/L	37.00	N	631.8	pCi/mL	1.55	Y	1.86	Y	1.990	Y	pCi/mL	-0.3400	N	0.74135
Uranium-234	pCi/L	0.0800	Y	0.8022	pCi/g wet	0.0066	N	0.0110	N	-0.0364	N	pCi/g ash	0.0058	Y	0.14935
Uranium-235/236	pCi/L	0.0067	N	0.0270	pCi/g wet	0.0062	N	0.0306	N	-0.0100	N	pCi/g ash	-0.0011	N	0.00741
Uranium-238	pCi/L	0.0310	Y	0.5386	pCi/g wet	0.0171	N	0.0108	N	-0.0161	N	pCi/g ash	0.0036	N	0.09633

<sup>a</sup>Regional Statistical Reference Level; this is the upper-limit background concentration (mean + 3 standard deviation) for goat milk based on data from 2010 to 2019 (n=4).

<sup>b</sup>Regional Statistical Reference Level; this is the upper-limit background concentration (mean + 3 standard deviation) for eggs based on data from 2010 to 2016 (n=4).

**Table S8-3.** Total analyte list (ug/L) and radionuclide (pCi/L and pCi/mL) concentrations in tea collected from perimeter locations in 2012 and 2019.

Year	Perimeter		Perimeter		Perimeter		Perimeter		Perimeter		Perimeter		
	Tea Liquid	FS-PSI-1912	Tea	NT-RBG-0001	Tea	NT-LAT-0003	Tea	NT-WRPA-0004	Tea	NT-PSI-0002	Tea Liquid	FS-PSI-1912	
	Pueblo De San Ildefonso	Pueblo de Santa Clara	Los Alamos	White Rock	Pueblo de San Ildefonso	Brewed with Pueblo Water	Brewed with Distilled Water	Brewed with Distilled Water	Brewed with Distilled Water	Pueblo de San Ildefonso	Brewed with Pueblo Water		
	Brewed with Pueblo Water	Brewed with Distilled Water	Brewed with Pueblo Water										
	2019	2012	2012	2012	2012	2012	2012	2012	2012	2012	2019		
Element <sup>a</sup>	Unit	Result	Detected	Radionuclide	Unit	Result <sup>b</sup>	Detected	Result	Detected	Result	Detected	Result	
Aluminum	ug/L	850	N	Americium-241	pCi/L	0.0026	N	0.0028	N	0.0058	N	0.0086	N
Antimony	ug/L	1.40	N	Cesium-137	pCi/L	-0.6000	N	-1.5000	N	-3.4000	N	2.50	N
Arsenic	ug/L	6.70	Y	Plutonium-238	pCi/L	0.0074	N	0.0104	N	0.0019	N	0.0076	N
Barium	ug/L	16.0	N	Plutonium-239/240	pCi/L	0.0020	N	0.0137	N	0.0085	N	0.0075	N
Beryllium	ug/L	12.0	N	Strontium-90	pCi/L	0.1800	N	1.46	Y	0.1800	N	0.7000	Y
Cadmium	ug/L	2.60	N	Tritium	pCi/mL	0.0300	N	0.0300	N	0.0600	N	-0.0500	N
Calcium	ug/L	6200	Y	Uranium-234	pCi/L	0.0234	N	0.0238	Y	0.0123	N	0.0430	Y
Chromium	ug/L	10.0	N	Uranium-235/236	pCi/L	-0.0042	N	0.0000	N	0.0062	N	0.0046	N
Cobalt	ug/L	2.00	N	Uranium-238	pCi/L	0.0090	N	0.0166	Y	0.0053	N	0.0351	Y
Copper	ug/L	21.0	Y									6.84	Y
Iron	ug/L	310	N										
Lead	ug/L	0.8400	N										
Magnesium	ug/L	890	Y										
Manganese	ug/L	7.70	Y										
Mercury	ug/L	0.6000	N										
Nickel	ug/L	2.70	N										
Potassium	ug/L	18000	Y										
Selenium	ug/L	7.90	N										
Silver	ug/L	0.3900	N										
Sodium	ug/L	51000	Y										
Thallium	ug/L	0.0660	N										
Vanadium	ug/L	3.50	Y										
Zinc	ug/L	9.50	Y										

<sup>a</sup>Al, Ba, Be, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, V and Zn by method SW6010B and analyzed by ICP; Sb, As, Cd, Pb, Se, Ag and Th by method SW6020B and analyzed by ICPMS; Hg by method SW7471 and analyzed by cold vapor AA.

<sup>b</sup>See Appendix B for an explanation of the presence of negative values.

Table S8-4. Total analysis list concentrations (mg/kg) in crops collected from LANL and surrounding areas in 2019.

Location	Location info	Foodstuff type	Location ID	Arsenic			Boron			Cadmium			Chlorine			Copper			Lead			Manganese			Mercury			Nickel			Pentachlorophenol			Selenium			Thallium			Vanadium		
				Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg	Detect	mg/kg							
LANL	Trinity Canyon	Lambquarters	FS-LANL-1991	76.0	Y	0.1280	N	0.0456	Y	0.0510	N	0.0510	Y	1300	Y	0.0500	Y	0.0510	Y	200	Y	0.0260	Y	0.3000	Y	0.0200	Y	0.0080	N	0.0200	Y	0.0250	Y	0.0300	Y	20.0	Y					
LANL	Trinity Canyon	Apricots	FS-LANL-1992	78.0	Y	0.1280	Y	0.0456	N	0.0510	N	0.0510	Y	1300	Y	0.0500	N	0.0510	Y	200	Y	0.0260	N	0.3000	N	0.0200	Y	0.0080	N	0.0200	Y	0.0250	Y	0.0300	Y	20.0	Y					
LANL	Trinity Canyon	Apples	FS-LANL-1993	78.0	Y	0.1280	Y	0.0456	N	0.0510	N	0.0510	Y	1300	Y	0.0500	N	0.0510	N	200	Y	0.0260	Y	0.3000	Y	0.0200	Y	0.0080	N	0.0200	Y	0.0250	Y	0.0300	Y	20.0	Y					
LANL	Trinity Canyon	Tomatoes	FS-LANL-1994	250	Y	0.0820	Y	0.0350	N	0.13.0	Y	0.0570	N	0.0500	Y	2500	Y	0.0500	N	0.0510	Y	500	Y	0.2300	Y	0.0700	N	0.0500	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	7.50	Y			
LANL	Trinity Canyon	Peas	FS-LANL-1995	110	Y	0.0820	Y	0.0350	N	0.13.0	Y	0.0570	N	0.0500	Y	1800	Y	0.0500	N	0.0510	Y	300	Y	0.2300	Y	0.0700	N	0.0500	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	7.50	Y			
LANL	Trinity Canyon	Peaches	FS-LANL-1996	42.0	Y	0.1480	Y	0.0320	N	0.14.0	Y	0.0500	N	0.0520	N	1800	Y	0.0500	N	0.0510	Y	570	Y	0.2400	Y	0.0600	N	0.0500	Y	0.0120	N	0.0200	Y	0.0250	Y	0.0300	Y	7.50	Y			
LANL	Trinity Canyon	Peaches	FS-LANL-1997	37.0	Y	0.1480	Y	0.0370	Y	2.90	Y	0.0510	N	0.0510	N	610	Y	0.0700	N	0.0510	Y	22.0	Y	0.0800	N	0.10.0	Y	4.90	Y	0.0800	N	0.0120	N	0.0200	Y	0.0250	Y	0.0300	Y	9.50	Y	
Los Alamos	Parmenter	Cherries - pie	FS-LA-1991	5.40	Y	0.1180	Y	0.0456	N	5.30	Y	0.0620	N	0.0510	N	7.40	Y	0.0500	N	0.0510	Y	310	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	10.0	Y					
Los Alamos	Parmenter	Cherries - brand	FS-LA-1992	20.0	Y	0.1180	Y	0.0456	N	5.30	Y	0.0620	N	0.0510	N	7.40	Y	0.0500	N	0.0510	Y	320	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	10.0	Y					
Los Alamos	Parmenter	Cherries - bling	FS-LA-1994	4.60	Y	0.0950	Y	0.0470	Y	5.60	Y	0.0600	N	0.0510	N	6.10	Y	0.0500	N	0.0510	Y	370	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	6.70	Y					
Los Alamos	Parmenter	Apricots	FS-LA-1995	7.00	Y	0.0820	Y	0.0456	N	12.0	Y	0.0520	N	0.0510	N	7.30	Y	0.0500	N	0.0510	Y	320	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	7.50	Y					
Los Alamos	Parmenter	Apricots	FS-LA-1996	11.0	Y	0.0820	Y	0.0350	N	1.70	Y	0.0570	N	0.0500	N	3.50	Y	0.0500	N	0.0510	Y	320	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	7.50	Y					
White Rock	Parmenter	Cherry - pie	FS-WR-1998	9.90	Y	0.0700	Y	0.0456	N	1.50	Y	0.0500	N	0.0510	N	6.00	Y	0.0500	N	0.0510	Y	190	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	12.0	Y					
White Rock	Parmenter	Apples	FS-WR-1999	13.00	Y	0.0700	Y	0.0456	N	1.80	Y	0.0500	N	0.0510	N	700	Y	0.0500	N	0.0510	Y	9.80	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	9.50	Y					
White Rock	Parmenter	Apples	FS-WR-2000	24.0	Y	0.1280	Y	0.0510	N	1.00	Y	0.0500	N	0.0510	N	700	Y	0.0500	N	0.0510	Y	160	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	5.70	Y					
White Rock	Parmenter	Cherries - pie	FS-WR-2003	7.50	Y	0.0950	Y	0.0456	N	8.40	Y	0.0520	N	0.0510	N	2800	Y	0.0500	N	0.0510	Y	17.0	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	7.50	Y					
White Rock	Parmenter	Cherries - bling	FS-WR-2008	3.40	N	0.1180	Y	0.0456	Y	3.60	Y	0.0520	N	0.0510	N	540	Y	0.0500	N	0.0510	Y	650	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	6.70	Y					
Pubde de San Ildefonso	Parmenter	Pears	FS-Psi-1991	92.0	Y	0.0870	Y	0.0676	Y	0.0510	N	0.0510	N	2300	Y	1.10	Y	0.0520	Y	4.10	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	6.00	Y							
Pubde de San Ildefonso	Parmenter	Peaches	FS-Psi-1992	52.0	Y	0.0870	Y	0.0676	Y	0.0510	N	0.0510	N	1200	Y	0.0500	N	0.0510	Y	140	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	7.50	Y							
Pubde de San Ildefonso	Parmenter	Apples	FS-Psi-1993	11.0	Y	0.1480	Y	0.0650	N	4.20	Y	0.0520	N	0.0510	N	690	Y	0.0500	N	0.0510	Y	2.40	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	1.70	Y					
Pubde de San Ildefonso	Parmenter	Pears	FS-Psi-1994	12.0	Y	0.1480	Y	0.0650	N	4.20	Y	0.0520	N	0.0510	N	680	Y	0.0500	N	0.0510	Y	240	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	1.70	Y					
Pubde de San Ildefonso	Parmenter	Watermelons	FS-Psi-1995	38.0	Y	0.0950	Y	0.0510	N	4.60	Y	0.0500	N	0.0510	N	960	Y	0.0500	N	0.0510	Y	1.60	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	5.50	Y					
Pubde de San Ildefonso	Parmenter	Green Chile	FS-Psi-1996	31.0	Y	0.0950	Y	0.0510	N	2.00	Y	0.0500	N	0.0510	N	550	Y	0.0500	N	0.0510	Y	2.70	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	4.00	Y					
Pubde de San Ildefonso	Parmenter	Orange grapefruit	FS-Psi-1997	120.0	Y	0.0820	Y	0.0510	N	2.00	Y	0.0500	N	0.0510	N	2200	Y	0.0500	N	0.0510	Y	4.00	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	20.0	Y					
Pubde de San Ildefonso	Parmenter	Corn	FS-Psi-1998	8.10	Y	0.0700	Y	0.0506	N	1.30	Y	0.0610	N	0.0510	N	360	Y	0.0500	N	0.0510	Y	1.70	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	15.0	Y					
Pubde de San Ildefonso	Parmenter	Eggs	FS-Psi-1999	0.80	N	0.0700	Y	0.0506	N	0.50	Y	0.0600	N	0.0510	N	2600	Y	0.0500	N	0.0510	Y	0.28	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	10.0	Y					
Pubde de San Ildefonso	Parmenter	Pecado Pears	FS-Psi-19911	180	Y	0.0800	Y	0.0506	N	0.50	Y	0.0600	N	0.0510	N	1000	Y	0.0500	N	0.0510	Y	26.0	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	2.00	Y					
Pubde de San Ildefonso	Parmenter	Pecado Pears	FS-Psi-19912	120	Y	0.0800	Y	0.0506	N	0.40	Y	0.0600	N	0.0510	N	460	Y	0.0500	N	0.0510	Y	320	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	30.0	Y					
Pubde de Cuchillo	Downstream LANL	Cherries - pie	FS-C-Psi-1991	120	Y	0.0820	Y	0.0600	Y	2.00	Y	0.0600	N	0.0510	N	190	Y	0.0500	N	0.0510	Y	26.0	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	15.0	Y					
Pubde de Cuchillo	Downstream LANL	Cherries - pie	FS-C-Psi-1992	120	Y	0.0820	Y	0.0600	Y	2.00	Y	0.0600	N	0.0510	N	180	Y	0.0500	N	0.0510	Y	26.0	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	15.0	Y					
Pubde de Cuchillo	Downstream LANL	Corns	FS-C-Psi-1993	5.20	Y	0.1080	Y	0.0506	N	1.00	Y	0.0620	N	0.0510	N	250	Y	0.0500	N	0.0510	Y	20.0	Y	0.0500	N	0.0510	Y	0.0050	N	0.0200	Y	0.0250	Y	0.0300	Y	37.0	Y					
Pubde de Cuchillo	Downstream LANL	Peaches	FS-C-Psi-1994	5.40	Y	0.1080	Y	0.0506	N	0.20	Y	0.																														

**Table S8-5. Total analyte list concentrations in goat milk, chicken eggs, and goose eggs collected from perimeter and background areas in 2019.**

Element <sup>a</sup>	Goat Milk		Goat Milk		Goose Eggs		Chicken Eggs		Chicken Eggs		
	FS-LA-1908		FS-BKGD-1908		FS-WR-1906		FS-WR-1907		FS-BKGD-1906		
	Los Alamos	Perimeter	Santa Cruz	Background	White Rock	White Rock	El Rito	Background	Perimeter	Background	
Element <sup>a</sup>	ug/L	Detected	ug/L	Detected	mg/kg wet	Detected	mg/kg wet	Detected	mg/kg wet	Detected	
Aluminum	850	N	850	N	6.50	N	6.32	N	6.59	N	
Antimony	1.40	N	2.40	Y	0.6360	N	0.6760	N	1.43	N	
Arsenic	1.30	N	1.30	N	0.3360	N	0.3340	N	0.3070	N	
Barium	82.0	Y	160	Y	0.9590	Y	0.7530	Y	0.9330	Y	
Beryllium	12.0	N	12.0	N	0.0199	N	0.0198	N	0.0182	N	
Cadmium	2.60	N	2.6	N	0.0956	N	0.0929	N	0.0969	N	
Calcium	1200000	Y	1400000	Y	565	Y	529	Y	564	Y	
Chromium	20.0	Y	27.0	Y	0.1430	N	0.1390	N	0.1450	N	
Cobalt	2.00	N	2.00	N	0.1430	N	0.1390	N	0.1450	N	
Copper	46.0	Y	36.0	Y	0.7560	Y	0.6960	Y	0.6230	Y	
Iron	330	Y	310	Y	32.2	N	26.3	N	31.6	N	
Lead	0.9000	Y	1.30	Y	0.3150	N	0.3070	N	0.3200	N	
Magnesium	110000	Y	140000	Y	112	Y	108	Y	105	Y	
Manganese	34.0	Y	46.0	Y	0.4910	N	0.5890	N	0.7420	N	
Mercury	0.6000	N	0.6000	N	0.0036	N	0.0034	N	0.0040	N	
Nickel	3.10	Y	2.70	N	0.0994	N	0.0988	N	0.0909	N	
Potassium	860000	Y	1800000	Y	1260	Y	1270	Y	1370	Y	
Selenium	7.90	N	11.0	Y	0.4610	Y	0.4950	Y	0.4870	Y	
Silver	0.3900	N	0.3900	N	0.0956	N	0.0929	N	0.0969	N	
Sodium	670000	Y	480000	Y	1270	Y	1300	Y	1220	Y	
Thallium	0.1000	Y	0.0660	N	0.1390	N	0.1380	N	0.1270	N	
Vanadium	2.40	N	2.40	N	0.0956	N	0.0929	N	0.0969	N	
Zinc	2600	Y	3800	Y	13.2	Y	12.3	Y	13.7	Y	
										28.0	Y

<sup>a</sup>Al, Ba, Be, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, V and Zn by method SW6010B and analyzed by ICP; Sb, As, Cd, Pb, Se, Ag and Th by method SW6020B and analyzed by ICPMS; Hg by method SW7471 and analyzed by cold vapor AA.

Table S8-6. Total polychlorinated biphenyl concentrations in goat milk, chicken eggs, and goose eggs collected from perimeter and background locations in 2019.

Goat Milk			Goat Milk			Goose Eggs			Chicken Eggs			Chicken Eggs		
Unit	Result	Detected	Unit	Result	Detected	Unit	Result	Detected	Unit	Result	Detected	Unit	Result	Detected
Total PCB	ug/L	0.00922	Y											
		0.00000	N											
				mg/kg	0.00228	Y								
							0.000924	Y						
								0.000415	Y					
									0.000264	Y				